

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ENDYMED MEDICAL LTD. AND ENDYMED MEDICAL, INC.,
Petitioners,

v.

SERENDIA, LLC,
Patent Owner.

Case No. IPR2024-00843

U.S. Patent No. 9,775,774

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,775,774**

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EXHIBITS

Exhibit	Description
1001	U.S. Patent No. 9,775,774 (“the ’774 Patent”)
1002	Certified Copy of File Wrapper of the ’774 Patent
1003	Declaration of Dany Bérubé, Ph.D.
1004	U.S. Patent No. 8,608,737 to Mehta <i>et al.</i> (“Mehta”)
1005	International Patent Application Publication No. WO 2010/016848 by Na <i>et al.</i> (“Na ’848”)
1006	Post- <i>Markman</i> Hearing Joint Claim Construction Chart from related ITC proceeding
1007	Order No. 35 Construing Certain Terms of the Asserted Claims (Markman Claim Construction) from related ITC proceeding
1008	[Reserved]
1009	[Reserved]
1010	Korean Registered Utility Model No. KR20-0441552 to Lee <i>et al.</i> (“Lee”)
1011	Certified Translation of Korean Registered Utility Model No. KR20-0441552 to Lee <i>et al.</i> (“Lee”)
1012-1020	[Reserved]
1021	Korean Registered Patent No. KR10-1013581 to Ra Jong Joo
1022	Certified Translation of Korean Registered Patent No. KR10-1013581 to Ra Jong Joo
1023	U.S. Patent Application Publication No. US2011/0172745 A1 by Na <i>et al.</i>

Exhibit	Description
1024	U.S. Patent No. 9,320,536 to Na
1025	Substitute Declaration of Jean Woloszko, Ph.D

EndyMed Medical Ltd. and EndyMed Medical, Inc. (collectively, “Petitioners”) request *inter partes* review (“IPR”) of claims 1-20 of U.S. Patent No. 9,775,774 (“the ’774 patent”) (EX1001), assigned to Serendia, LLC (“Patent Owner”).

This Petition is identical in all material respects to the petition filed in instituted IPR2024-00383, to which Petitioners concurrently filed a Motion for Joinder. The petitions contain identical invalidity analysis in Sections I, V-IX, and differ only in party-specific facts and formalities in Sections II-IV and X. This Petition adds and relies on EX1025, Substitute Declaration of Jean Woloszko, Ph.D. (added in IPR2024-00383 after its petition). Dr. Woloszko replaced expert Dr. Bérubé in IPR2024-00383 and agrees with and adopts paragraphs 15-244 of Dr. Bérubé’s Declaration. EX1025, ¶¶1,22.

I. INTRODUCTION

The ’774 patent is directed to radiofrequency (“RF”) microneedling that includes inserting needles into a patient’s skin and applying an RF signal to damage the dermis and cause a healing response that promotes skin rejuvenation. Independent claims 1 and 11 are respectively directed to a method and an apparatus for treating dermatological tissue using “one of extending or extendable” needles.

Microneedling has long been the subject of research and development efforts in the aesthetics field. Indeed, the Patent Office did not consider highly relevant art during prosecution of the '774 patent, including U.S. Patent No. 8,608,737 ("Mehta," EX1004) which is owned by Patent Owner's competitor Syneron Medical Ltd. and discloses an RF microneedling apparatus and corresponding treatment methods that anticipate most of the challenged claims as set forth in Ground I.

Furthermore, the challenged claims are not entitled to the benefit of a branch of applications in the priority chain of the '774 patent which lacks adequate written description of "extendable" needles as claimed. International Patent Publication No. WO2010/016848 ("Na '848," EX1005), which is in this priority chain and which has significant overlap with the '774 patent, should have been considered as prior art. Grounds II and III rely on combinations of Mehta and the overlapping disclosure of Na '848 to demonstrate that many of the challenged claims, including the remainder of the challenged claims not found in Ground I, would have been obvious to a person of ordinary skill in the art ("POSA").

Grounds IV and V are related to Grounds I and II, respectively, but also include Korean Patent No. 20-0441552 ("Lee," EX1010, EX1011). To the extent Mehta is found to not disclose needles extendable a "desired distance" under Patent Owner's interpretation of that phrase or otherwise, a POSA would have been

motivated to use and configure the stepper motor of the Mehta system for precise control of needle insertion depth along the axis of needle extension as Lee teaches.

The challenges presented in this Petition rely on prior art, combinations of prior art, and expert testimony that were not available to the PTO. Nor have the combined teachings of prior art references discussed herein been previously considered by the PTO. Accordingly, Petitioners respectfully request the Board to institute *inter partes* review and to cancel claims 1-20 of the '774 patent as unpatentable in view of the new Grounds presented in this Petition.

II. COMPLIANCE WITH REQUIREMENTS FOR IPR

A. Grounds for Standing (§ 42.104(a))

Pursuant to 37 C.F.R. § 42.104(a), Petitioners certify that the '774 patent is available for IPR and that Petitioners are not barred or estopped from requesting IPR based on the Grounds identified in this petition. This Petition is timely filed because the “time period set forth in § 42.101(b) shall not apply when the petition is accompanied by a request for joinder,” which is concurrently filed. 37 C.F.R. § 42.122(b).

B. Identification of Challenge and Statement of Precise Relief Requested

Petitioners challenge claims 1-20¹ of the '774 patent and requests that these claims be found unpatentable and cancelled in view of the following references:

- (1) U.S. Patent No. 8,608,737 to Mehta *et al.* (“Mehta”) (EX1004);
- (2) International Patent Publication No. WO2010/016848 by Na *et al.* (“Na ’848”) (EX1005);
- (3) Korean Patent No. 20-0441552 to Lee *et al.* (“Lee”) (EX1010, EX1011).

Petitioners assert the following Grounds of unpatentability under 35 U.S.C. §§ 102 and 103 (AIA):

<u>Ground</u>	<u>References</u>	<u>Statutory Basis</u>	<u>Challenged Claims</u>
Ground I	Mehta	§ 102	Claims 1-7 and 9-18
Ground II	Mehta and Na ’848	§ 103	Claims 8, 19, and 20
Ground III	Na ’848 and Mehta	§ 103	Claims 1, 5-11, and 15-20
Ground IV	Mehta and Lee	§ 103	Claims 1-7 and 9-18

¹ Patent Owner statutorily disclaimed claims 1-12 and 15-20 (IPR-2024-00383, EX2105). We expect grounds rejecting those claims to be moot, but are retained for completeness.

Ground V	Mehta, Lee, and Na '848	§ 103	Claims 8, 19, and 20
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In support of the proposed Grounds, this Petition includes a full statement of the reason why each of the challenged claims should be held unpatentable under 35 U.S.C. §§ 102 and 103. Petitioners rely on the exhibits identified herein, including the prior art noted above and the declarations of Dany Bérubé, Ph.D. (EX1003) and Jean Woloszko, Ph.D. (EX 1025). Dr. Bérubé is an expert in the medical device industry and the field of high frequency surgical systems with over 25 years of experience in the industry. EX1003, ¶¶4-13, App'x A. Dr. Woloszko has over 30 years of experience in the medical device industry and is a recognized expert in the field of high frequency surgical systems - including those used to remodel the dermal layer of the skin. EX1025, App'x A

III. FEES FOR IPR REVIEW (§ 42.15(A))

This Petition is accompanied by the fees set forth in 37 C.F.R. § 42.15(a). Please charge or credit Deposit Account No. 50-3355 with any shortage or overpayment of fees associated with this Petition and any other fees incurred by Petitioners in connection with this IPR.

IV. MANDATORY NOTICES (§ 42.8(B))

A. Real Party-In-Interest (§ 42.8(b)(1))

Petitioners certify that the real parties-in-interest are EndyMed Medical Ltd. and EndyMed Medical, Inc.

B. Related Matters (§ 42.8(b)(2))

The '774 patent is asserted in the following pending actions:

- U.S. International Trade Commission: *In the Matter of Certain Dermatological Treatment Devices and Components Thereof*, Inv. No. 337-TA-1356²;
- *Serendia, LLC v. Cutera, Inc.*, No. 1:23-cv-00222 (D. Del.);
- *Serendia, LLC v. Cynosure, LLC*, No. 1:23-cv-00223 (D. Del.);
- *Serendia, LLC v. EndyMed Medical, Inc.*, No. 1:23-cv-00224 (D. Del.);
- *Serendia, LLC v. Lutronic Aesthetics, Inc.*, No. 1:23-cv-00225 (D. Del.); and
- *Serendia, LLC v. Rohrer Aesthetics, Inc.*, No. 1:23-cv-00226 (D. Del.).
- *Jeisys Medical Inc. et al v. Serendia, LLC*, IPR2024-00383.

The related district court actions have all been stayed.

Petitioners are not aware of any reexamination certificates related to the '774 patent. U.S. Patent Nos. 9,320,536 (“the '536 patent”) and 10,869,812 (“the '812 patent”)—the parent application and a continuation of the '774 patent, respectively—are or will be the subject of other requests for *inter partes* review filed by Petitioners.

² Patent Owner is the Complainant in this ITC proceeding; Petitioners are Respondents in this ITC proceeding.

The '774, '536, and '812 patents have each been the subject of IPR petitions filed by Cartessa Aesthetics, LLC on December 28, 2021 (“Cartessa Aesthetics IPRs”), relying on prior art different from that forming the Grounds herein, in the following proceedings:

Patent	IPR No.	Institution Decision
'774	IPR2022-00376	Institution Denied
'536	IPR2022-00378	Institution Denied
'812	IPR2022-00377	Institution Denied

C. Lead and Back-Up Counsel (§ 42.8(b)(3))

Lead Counsel: Guy Yonay (Reg. No. 52,388), tel. 646-878-0808; and

Back-Up Counsel: Zeev Pearl (Reg. No. 60,234), tel. 646-878-0803, Kyle Auteri (Reg. No. 74,494), tel. 646-878-0824, and Milo Eadan (Reg. No. 64,764), tel. 707-599-0424.

Address for counsel: Pearl Cohen Zedek Latzer Baratz LLP, 7 Times Square Tower, 19th Fl., New York, NY, 10036; facsimile: 646-878-0801.

D. Service Information (§ 42.8(b)(4))

Petitioners provide the following service information for designated counsel. Petitioners consent to electronic service, under 37 C.F.R. § 42.6(e)(1), by e-mail

to: gyonay@pearlcohen.com; zpearl@pearlcohen.com; kauteri@pearlcohen.com;
meadan@pearlcohen.com; and endymed@pearlcohen.com.

V. THE '774 PATENT

The '774 patent, titled “Method, System, and Apparatus for Dermatological Treatment,” was filed on April, 12, 2016, and issued on October 3, 2017. EX1001, at p.1. The Office issued a Certificate of Correction on April 4, 2023, which added a priority claim. *Id.* at 32.

A. Brief Description

The '774 patent relates to systems and methods “used in treating dermatological tissue.” *Id.* at 1:30-32. In particular, a treatment system (e.g., 310) includes a device (e.g., 320) with a plurality of acupuncture needles or pins 351 and a signal generator (e.g., 300) which is electrically coupled to the device via one or more wires 300A. *Id.* at 3:38-54, FIGS. 2A and 2B (below).

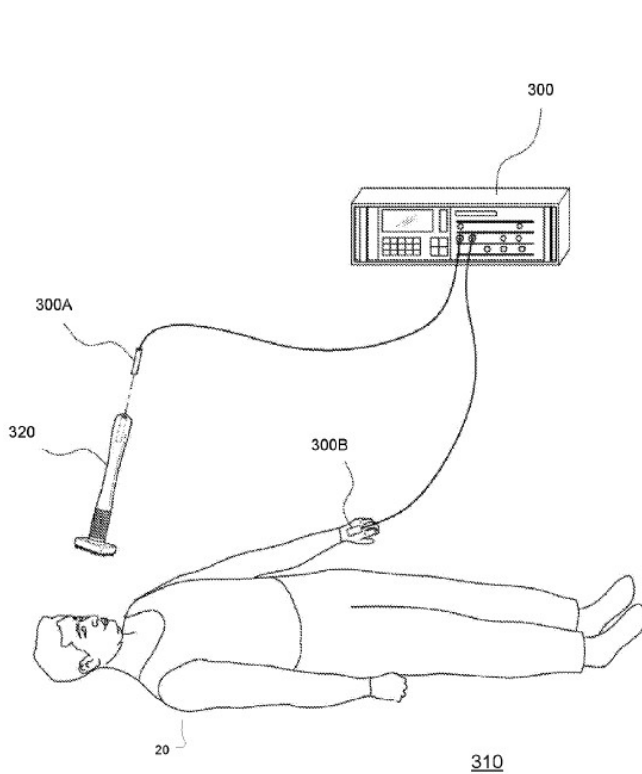
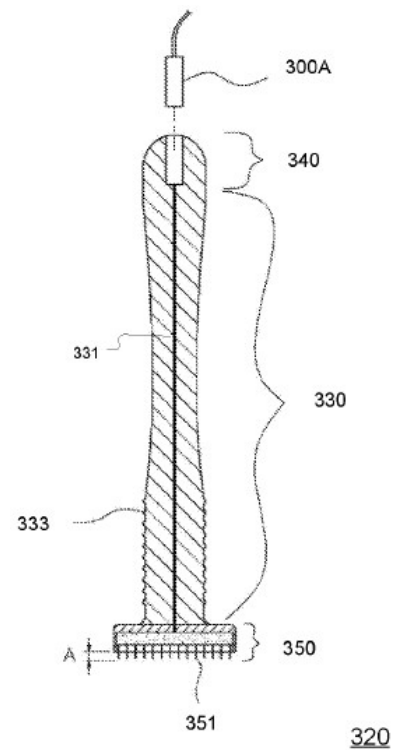


FIGURE 2A

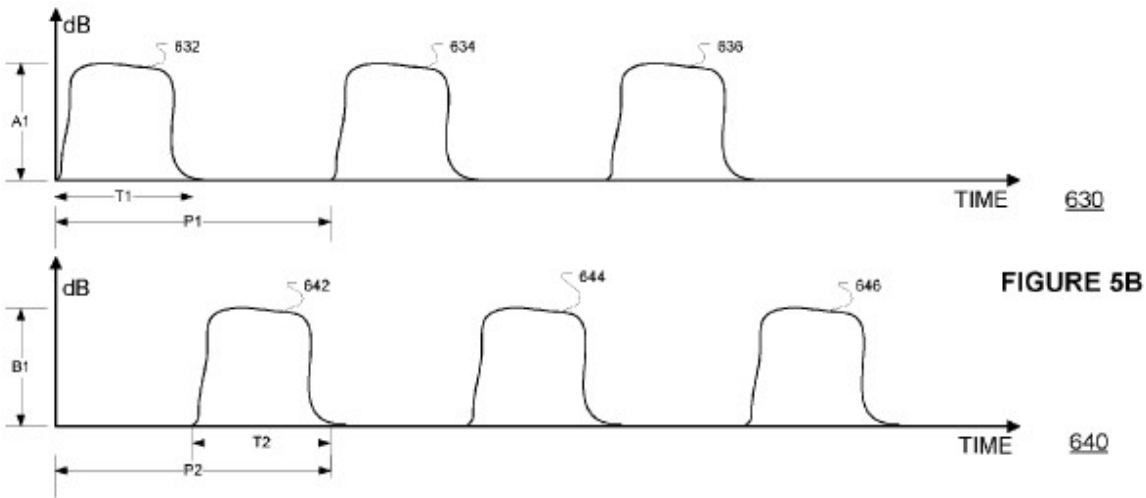
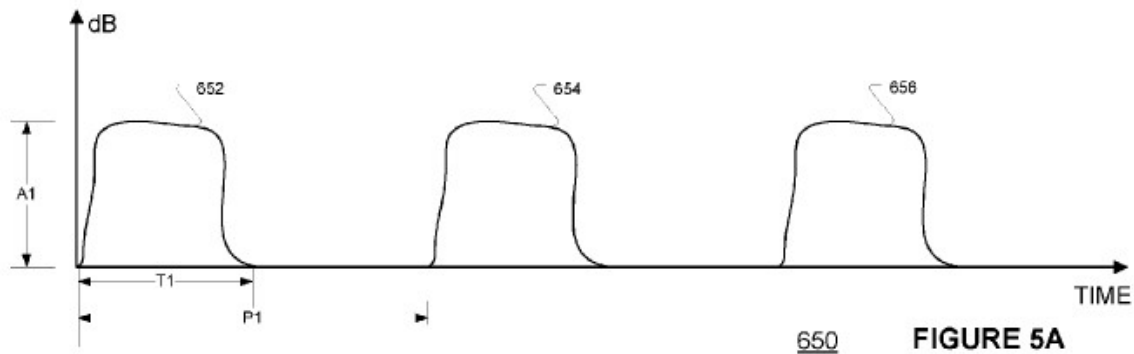


320

FIGURE 2B

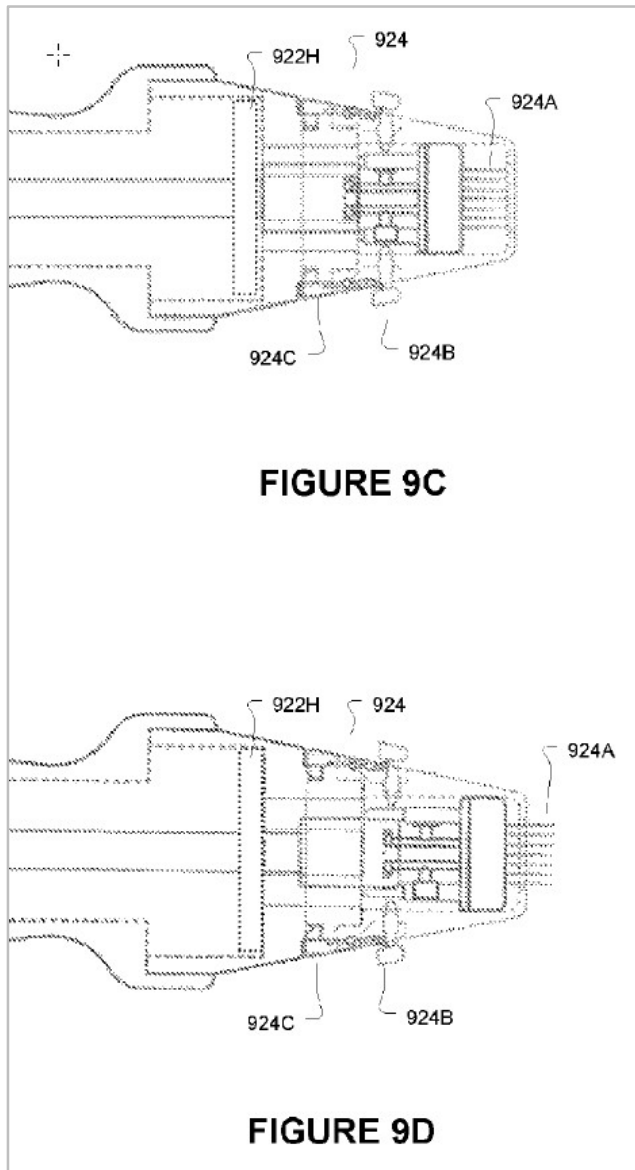
'774 Patent-FIGS. 2A-2B

The electrical signal generation system 300 may produce electrical signals “to vibrate one or more pins 351 electrically coupled to the system 300 [to] increase the micro-wound or cut formed in dermis by the pin 351.” *Id.* at 3:55-60, 4:1-15, FIG. 2A. The electrical signals may be applied in the form of square-wave pulses. *Id.* at 6:13-58, FIGS. 5A and 5B (below).



'774 Patent-FIGS. 5A-5B

The '774 patent discloses devices in which the needles 351 are either fixed in place, i.e., non-extendable, such as depicted in FIG. 2B (above), or movable between retracted and deployed positions, i.e., extendable, via a motor. *See, e.g., id.* at 2:31-33, 3:45-52, 11:48-60, FIGS. 9C-9D (excerpts below).



'774 Patent-FIGS. 9C-9D

B. Prosecution History of the '774 Patent

The application leading to the '774 patent—Serial No. 15/096,686—was filed on April 12, 2016, with twenty original claims which recited only “extendable needles.” EX1002 at 59-61. The Applicant submitted a Preliminary Amendment

in which all original claims were canceled and the twenty issued claims were added. *Id.* at 63-77 at 72-75.

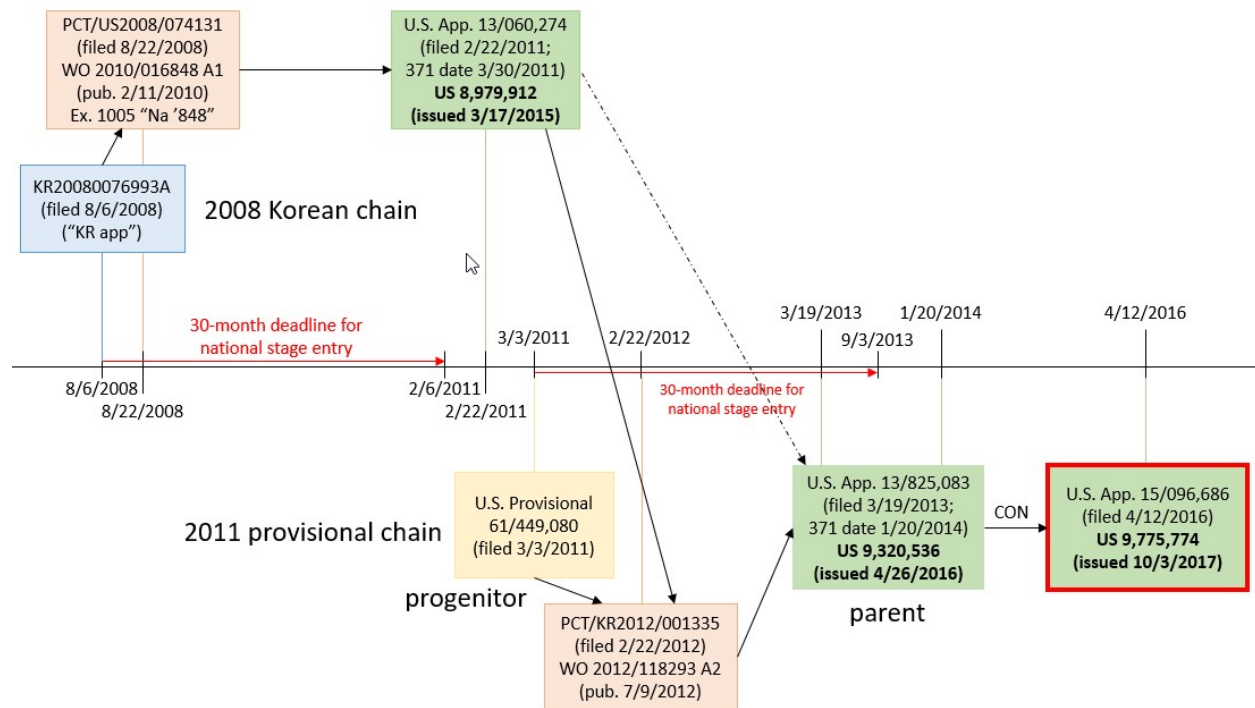
The patentee incorrectly represented to the USPTO that the '774 patent's parent application is a continuation of Na '848's U.S. national stage application. EX1002 at 9. It appears that as a result of that representation, Na '848 was not considered by the Examiner as prior art during prosecution of the '774 patent.

During prosecution, the claims were not rejected under Sections 102 or 103 in view of any prior art, but rather only for obviousness-type double-patenting in view of the issued claims of the '536 patent. *Id.* at 189-194. After a terminal disclaimer was filed, *id.* at 201-208, 233-245, a Notice of Allowance issued on August 21, 2017, which did not include a statement of reasons for allowance. *Id.* at 249-253.

C. Priority Date of the Challenged Claims

As depicted below, the '774 patent recites priority to a parent application which in turn claims priority to two separate chains: (1) the "2011 provisional chain" and (2) the "2008 Korean chain," which includes Na '848 (EX1005). Because the description of "extendable" needles is plainly absent from the 2008 Korean chain, the challenged claims are not entitled to any priority date from that chain and, therefore, have a priority date no earlier than March 3, 2011, the filing

date of the progenitor application of the 2011 provisional chain³. *See Samsung Elecs. Co., Ltd. v. NuCurrent, Inc.*, PGR2019-00050, Paper 26 at 16 (P.T.A.B. Nov. 30, 2020) (holding that claim reciting two distinct options lacks written description when only one option is described) (“Petitioner has shown persuasively that the [specification] supports only one of the two alternatives covered by the recitation in claim 1.”).



³ Petitioners notes that there are irregularities in both the 2008 Korean and 2011 provisional chains that may make the effective filing date of the challenged claims as late as March 19, 2013, the filing date of the parent application. But, the Board may find that the references applied herein are prior art even if the effective filing date of the challenged claim is assumed to be the earliest filing date in the 2011 provisional chain, i.e., March 3, 2011.

Under 35 U.S.C. §§119 and 120, a patent application may rely on the filing date of an earlier-filed application only if one or more claims have written description support in the earlier-filed application. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

Each one of the challenged independent claims recites “a plurality of needles one of extending or extendable a desired distance from the surface.” EX1001, cls. 1, 11. Extendable needles are not described in the 2008 Korean chain. EX1003, ¶¶40-44. Instead, they were first disclosed in the 2011 provisional chain in Figures 9-11 which are wholly absent from the 2008 Korean chain. *Compare* EX1001 with EX1023, EX1005, and EX1021-EX1022. Nothing in the 2008 Korean chain shows the inventor possessed needles that are “extendable a desired distance from [a device] surface.” EX1003, ¶43. For this reason alone, all of challenged claims 1-20 are not adequately supported by the 2008 Korean chain. Dependent claims 2-4 and 12-14 include additional features related to “extendable needles” that are also not described in the 2008 Korean chain. *Id.*, ¶44.

VI. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSA”) at the time of the earliest effective date for the challenged claims would have had (1) 7-10 years of experience with developing and/or using treatment systems for delivery of electromagnetic radiation energy to skin or other tissues, and (2) a related graduate

engineering degree or M.D. The POSA may have worked as part of a multidisciplinary team and drawn upon not only his own skills, but also taken advantage of certain specialized skills of others on the team when solving a technical problem. EX1003, ¶48. Additional education could substitute for professional experience and vice versa. *Id.* The Petition and evidence in support thereof demonstrate that the challenged claim would have been unpatentable from the perspective of one with any reasonable level of ordinary skill.

VII. HOW THE CHALLENGED CLAIMS ARE TO BE CONSTRUED

In an *inter partes* review, claims “shall be construed using the same claim construction standard that would be used to construe the claim in a civil action.” 37 C.F.R. § 42.100. The Board gives claims their ordinary and customary meaning, as would have been understood by a POSA at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc); 37 C.F.R. § 42.100(b). The prior art relied upon in this Petition renders the subject matter of the challenged claims of the ’774 patent unpatentable under any reasonable claim interpretation, including the plain and ordinary meaning of the recited terms.

A. Agreed Constructions from ITC Proceeding

During the ITC proceeding, Patent Owner and Petitioners agreed to the following construction for the phrase “needles one of extending or extendable”:

needles that are either extended or can be extended [from the device surface]
(needles ‘extending’ a desired distance from the surface covers non-extendable needles having a fixed length; ‘extendable’ needles covers needles which are not fixed).”

EX1007 at 16. Thus, needles “extending” a desired distance from a surface cover needles that are fixed and non-extendable relative to the surface as depicted, for example, in FIGS. 2A-2D of the ’774 patent, and needles “extendable” a desired distance from a surface cover needles that are extendable relative to the surface as shown, for example, in FIGS. 9C-9D and 10D-10E of the ’774 patent. EX1003, ¶51.

Patent Owner and Petitioners also agreed that the preambles of the challenged claims are limiting and that “a plurality of needles” means “two or more” needles. EX1007 at 15-16.

B. “a desired distance”

The term “a desired distance” should be given its plain and ordinary meaning, which simply distinguishes between needles extending or extendable a *desired distance* as opposed to an *undesired distance*. EX1003, ¶¶52-55.

To the extent that Patent Owner contends that the plain meaning of “desired distance” specifically requires a user-settable distance of needle extension along the axis of needle extension (in an attempt to exclude: (1) needles which are

extendable to a “fixed” desired distance; and (2) needles which are extendable to a desired distance based on choosing an appropriate angle of insertion), Patent Owner’s interpretation should be rejected because it is contrary to the plain meaning of “desired distance.” *Id.*, ¶53.

Patent Owner’s interpretation is also inconsistent with how the ’774 patent claims use the phrase “a desired distance” in connection with the “extending” embodiment having fixed, non-extendable needles, such as shown in FIGS. 2A-2D of the ’774 patent. EX1001, cl. 1, 11; EX1003, ¶54. Indeed, the agreed construction of the phrase “needles one of extending or extendable” mentioned above defines “needles extending ... a desired distance from a surface” as covering needles that are fixed and non-extendable relative to the surface. *See* EX1007 at 16; EX1003, ¶54.

In any event, as discussed below, the prior art anticipates and/or renders obvious the challenged claims regardless of which interpretation of “desired distance” is applied.

C. Other Claim Terms

Other claim terms were construed, or interpretations were advanced, at the ITC, but Petitioners believe none of these other claim terms require express construction for purposes of deciding whether to institute trial or to find the challenged claim unpatentable. *See Nidec Motor Corp. v. Zhongshan Broad*

Ocean Motor Co., 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”). For example, the phrase “pulsed radio frequency signals” was given its plain and ordinary meaning. EX1007 at 36-39. Furthermore, RF energy in the form of a square wave as disclosed in Mehta and Na ’848 satisfies both interpretations of “pulsed radio frequency signals” advanced in the ITC proceeding. *Infra* Section IX.A.1.(c).

Petitioners note that different interpretations of the “mechanism” of claim 13 were also advanced in the ITC proceeding. EX1006 at 5-6. However, this dispute is not relevant to the present Petition because, under either competing construction, a motor as disclosed in both Mehta and Lee (among other mechanisms) comprises the claimed “mechanism” for causing extendable needles to extend a desired distance from an end surface. *Infra* Sections IX.A.1.(b), IX.A.3, IX.A.9, IX.D.1, and IX.D.2 below. Accordingly, these phrases need not be construed.

VIII. THE PRIOR ART

As discussed *infra*, the priority date of the challenged claims is assumed—for the purposes of this Petition—to be the earliest filing date in the 2011 provisional chain, i.e., March 3, 2011. The references applied herein are prior art using that priority date.

A. Mehta

Mehta is a U.S. patent issued from a patent application filed on April 20, 2009, which is a continuation of a patent application filed on February 6, 2009. EX1004 at p. 1. Thus, Mehta qualifies as prior art to the '774 patent under at least pre-AIA 35 U.S.C. § 102(e) and AIA 35 U.S.C. § 102(a)(2).⁴ Mehta discloses a microneedling device having extendable needles through which pulsed RF energy is applied through the needles to affect a patient's skin into which the needles are inserted. EX1004 at 2:63-3:17, 9:34-55, 15:27-54, 20:13-47, FIGS. 2A-2D, 4A, 4C, 6.

B. Na '848

Na '848 is an international patent application that published on February 11, 2010. EX1005 at p. 1. Thus, Na '848 qualifies as prior art under at least under pre-AIA 35 U.S.C. § 102(b) and AIA 35 U.S.C. § 102(a)(1). Paragraphs [0002]-[0059] and Figures 1-8 of Na '848 are substantially identical to columns 1:30-2:22, 2:60-9:38, 14:35-15:45, and Figures 1-8 of the '774 patent.

Na '848 discloses a treatment architecture 310 including an apparatus 320 with a plurality of acupuncture needles or pins 351 and an electrical signal

⁴ Although the '774 patent has an effective filing date of March 3, 2011, Patent Owner identified the application leading to the '774 patent as being an AIA application. *See* EX1002 at 10. Accordingly, AIA provisions apply to the '774 patent, and the references used herein are both pre-AIA and AIA prior art.

generation system 300 which is electrically coupled to the apparatus 320 via one or more wires 300A. EX1005 at [0026], FIG. 2A. The Na '848 needles 351 are fixed in place, i.e., non-extendable. EX1005 at FIG. 2B; EX1003, ¶62.

C. Lee

Lee is a Korean patent publication that published on August 25, 2008. EX1011 at 1. Thus, Lee qualifies as prior art under at least under pre-AIA 35 U.S.C. § 102(b) and AIA 35 U.S.C. § 102(a)(1). Lee teaches “depth-controllable insertion of microneedles” for creating holes in human skin using a skin treatment apparatus having a motor. EX1011 at Abstract, cl. 1.

IX. DETAILED EXPLANATION OF GROUNDS FOR CHALLENGE

Pursuant to 37 C.F.R. § 42.104(b), the cited prior art anticipates and/or renders obvious the challenged claims of the '774 patent. The primary references—Mehta and Na '848—disclose each and every limitation of claims 1-20 of the '774 patent and are readily combinable with one another (*see* Grounds I-III below). Further, Lee—from the same field—discloses the “desired distance” limitation even under Patent Owner’s interpretation and is readily combinable with Mehta and Na '848 (*see* Grounds IV-V below).

A. Ground I: Mehta Anticipates Claims 1-7 and 9-18

1. Independent Claim 1

Mehta anticipates claim 1 under Section 102. EX1003, ¶¶69-105.

(a) [1pre] A method of treating dermatological tissue

Mehta discloses a method of treating dermatological tissue. EX1003, ¶¶70-72. Mehta teaches apparatuses and methods to “treat tissue in the human body,” including “treat[ing] cosmetic conditions affecting the skin of various body parts,” and treatment of skin constitutes treatment of dermatological tissue. EX1004 at 1:14-19; 5:3-6, 19:17-19, 24:46-47; EX1003, ¶71. Mehta discloses apparatuses and methods for “percutaneously delivering energy to tissue” to “produce cosmetically beneficial effects” by “shrink[ing] collagen tissue in the dermis.” EX1004 at 2:37-45; 1:14-19, 2:58-62, 3:42-4:43, 4:63-5:15, 5:49-57, 7:52-59, 8:45-48, 8:54-65; EX1003, ¶71. Mehta thus discloses Element [1pre].

(b) [1a] placing a device surface on or near dermatological tissue to be treated, the surface including a plurality of needles one of extending or extendable a desired distance from the surface

Mehta discloses placing a device surface on or near dermatological tissue to be treated, the surface including a plurality of needles one of extending or extendable a desired distance from the surface, as recited in Element [1a]. EX1003, ¶¶73-98. Mehta discloses placing a device surface on or near dermatological tissue to be treated. EX1003, ¶¶74-75. Mehta teaches treatment of dermatological tissue by “placing a tissue engaging surface of an energy delivery device against a surface of the tissue.” EX1004 at 5:3-6, 1:14-19. Mehta discloses using the treatment system 200 depicted in FIG. 2B (below) by placing the tissue

engaging surface 106 (highlighted in green) of the treatment unit 202, which includes a needle array 108⁵, on the patient's skin 10. EX1004 at 12:23-28, 1:14-19, FIGS. 2B, 1 (detailed illustration of skin 10); EX1003, ¶¶74-75.

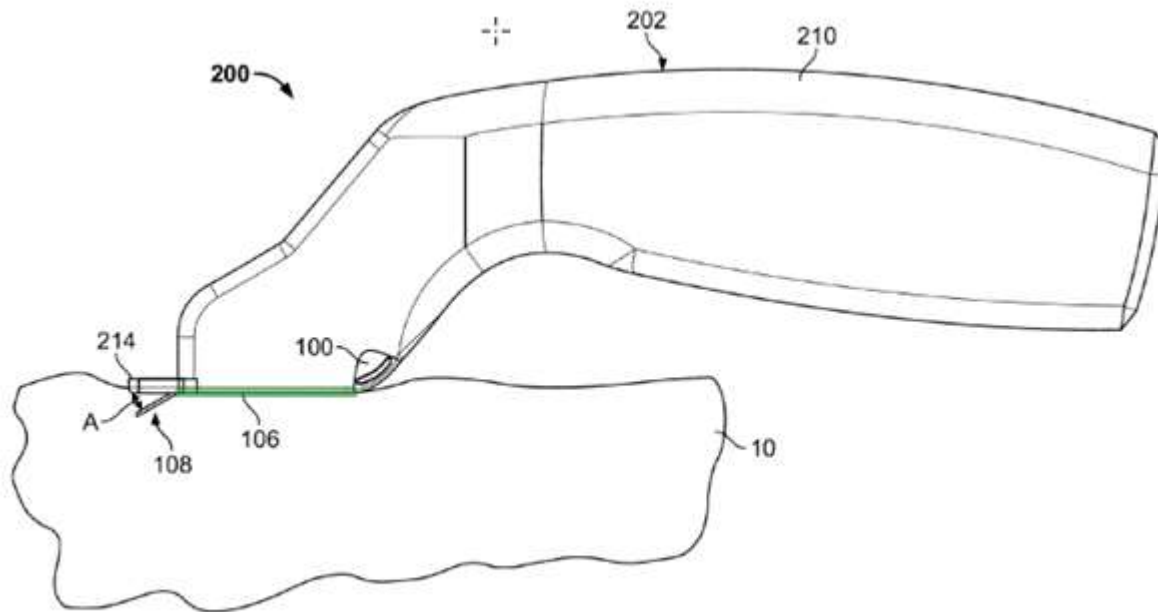


FIG. 2B

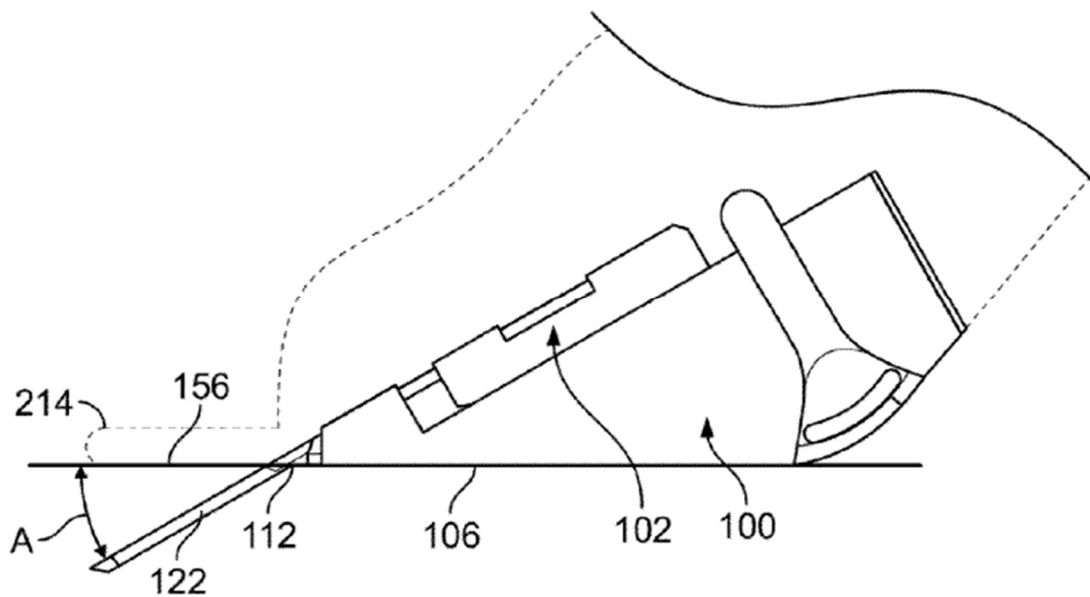
Mehta-FIG. 2B

Mehta discloses the device surface includes a plurality of needles that are one of extending or extendable a desired distance from the device surface.

EX1003, ¶¶76-97. For example, Mehta discloses a plurality of needles 104 that are extendable a desired distance from the surface 106. *Id.*; *Brown v. 3M*, 265 F.3d

⁵ Mehta uses the terms “probes,” “electrodes,” and “needles” interchangeably. EX1004 at 9:41-55, 12:47-58, 14:13-19, 15:42-49, 17:6-8, 21:34-38, 31:37-41, 37:7-16. A POSA would have understood that the Mehta probes are “needles.” EX1003, ¶¶58-60, 77.

1349, 1351-53 (Fed. Cir. 2001) (“When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art.... The principle of law is concisely embodied in the truism that: ‘That which infringes if later anticipates if earlier.’”); *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782 (Fed.Cir.1985). In the microneedling apparatus 200 of Mehta, the needles 104 are included as part of the tissue engaging surface 106 and are extendable by a desired distance from the tissue engaging surface 106—as is illustrated in FIG. 7A of Mehta, reproduced below. See EX1003, ¶79.

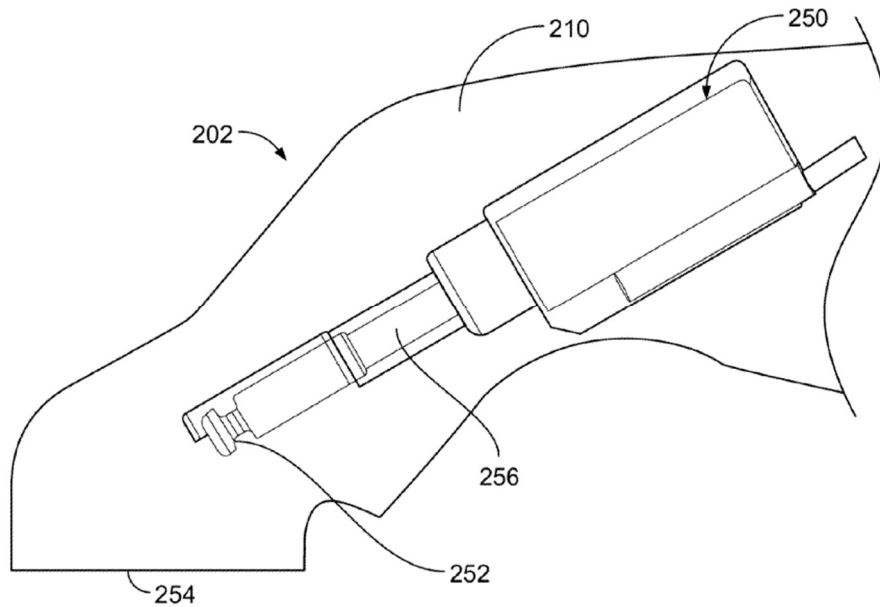


Mehta-FIG. 7A

Mehta discloses a needle assembly 102, having a plurality of needles 104, that is “slidable relative to the cartridge body 100 and the device body 210” to

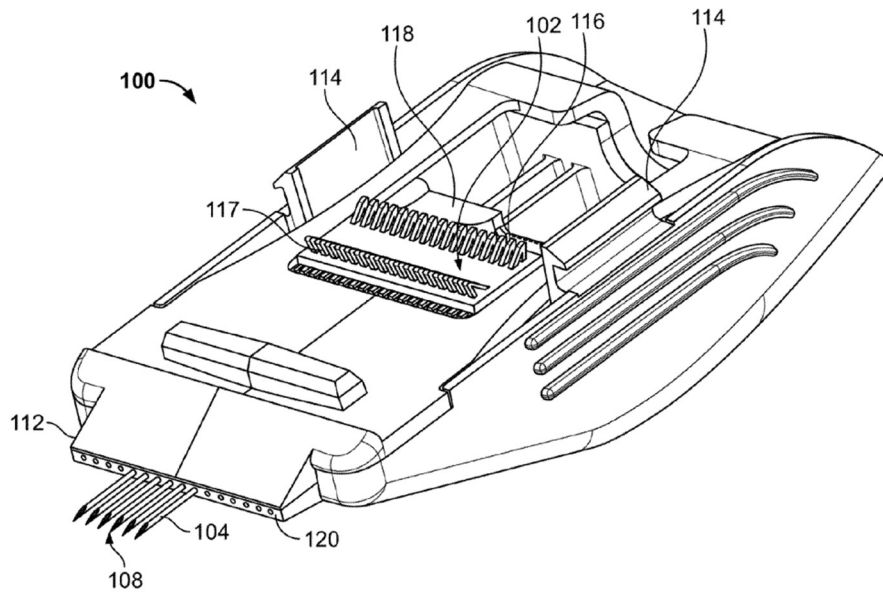
enable the needles 104 to “be driven into tissue.” EX1004 at 14:14-18. As the needle assembly 102 slides relative to the cartridge body, the needles 104 move between an extended position and a retracted position. EX1004 at FIGS. 4A (extended position), 4C (retracted position); EX1003, ¶¶78-83. The claimed “surface” is also satisfied by the plane defined by the tips of the needles of the deployable needle assembly 102 of Mehta when the needles 104 are not extended. *See* EX1003, ¶82; EX1007 at 26 (“deployable needle assembly end surface” means “the plane defined by the tips of the needles of the deployable needle assembly when the needles are not extended”).

Mehta discloses a motor that causes the plurality of extendable needles to extend a desired distance from the surface. EX1003, ¶¶84-97. Mehta discloses the motor 250 is coupled to the extendable needles to selectively advance and retract the needles. EX1003, ¶¶84-85. Mehta discloses “a moveable actuator 250” provided in the form of “any number of actuation means, including, but not limited to, pneumatic cylinders, springs, linear actuators, *or other such motors.*” EX1004 at 18:27-37 (emphasis added), FIG. 5 (reproduced below).



Mehta-FIG. 5

Mehta teaches that the “shaft 256 of the actuator 250 couples to” the cartridge 100 or the needle assembly 102 on the cartridge 100 and that “[t]he actuator 250 moves the shaft 256 where an engagement portion 252 on the shaft couples to” the needle assembly 102 “via a coupling portion 118...to advance and retract” the needles. EX1004 at 13:63-65, 18:26-37. FIG. 4A of Mehta (reproduced below) illustrates the coupling portion 118.



Mehta-FIG. 4A

Control of the actuator 250 confers the ability of the needles 104 to be extendable a desired distance from the surface. EX1003, ¶86. When the needles 104 are advanced by the motor 250, they extend by a desired distance to carry out a treatment. *See id.*; EX1004 at 18:26-37. Mehta discloses that placement of tissue engaging surface 106 on skin causes the needles to reach “the desired depth.” *See* EX1004 at 32:16-20; EX1003, ¶86. Mehta discloses a user interface for showing “the desired depth of placement for providing a treatment” and avoiding placement of needles “in an undesired region.” EX1004 at 32:63-33:3, 33:35-43; EX1003, ¶86.

Mehta discloses the needles 104 are extendable to a distance selected by a user, e.g. to correspond to a target tissue layer, and therefore are extendable “a

desired distance.” See EX1003, ¶¶87-97. Mehta discloses indicating both an actual depth of placement of the needles and a desired depth of placement for the needles to “[allow] the physician to...identify whether the array is located within the desired tissue layer” and “be informed that further advancement of the probes is necessary.” EX1004 at 33:14-16, 33:24-27; 13:37-45, 32:52-57, 32:67-33:3, FIGS. 10B, 10E. Mehta further discloses “[guiding] probe placement” by “[adjusting]” the system (EX1004 at 33:30-40), and provides a stepper motor to support such adjustments (*id.* at 15:34-42; 10:33-39, 12:5-8). See EX1003, ¶¶87-88. Thus, Mehta teaches the “desired distance” limitation regardless of which interpretation of “desired distance” discussed above in Section VII.B is applied. *Id.*

A user can also achieve a desired distance of needle extension by, e.g., selecting a cartridge having needles of a particular length and coupling that cartridge to the proximal end of the handpiece 210. EX1003, ¶89; EX1004 at 17:66-18:3 (“[T]he system can be provided with a number of...cartridges...for the physician to control treatment or placement of the electrodes[, i.e. needles,] by exchanging cartridges.”); 2:47-49, 10:17-23, 14:8-12. Mehta also discloses exemplary details of how the needles 104 are inserted into the skin 10. EX1004 at 15:27-17:21, 21:1-21, FIGS. 4A-4C and 7A. To ensure that the needles extend by the desired distance, Mehta discloses “[o]ver-inserting and then partially

retracting” the needles to the desired distance in order to provide “a more reliable insertion.” EX1004 at 16:39-41; EX1003, ¶90. Mehta further teaches that the user can additionally select a distance of needle extension by, e.g., choosing an angle A (see EX1004 at FIG. 2B) “between nearly 0 and 90 degrees” such that the needles 104 are inserted at “a desired location in tissue.” *Id.* at 12:23-46; 12:47-58, 20:56-21:13, FIGS. 2A-2B, 7A; EX1003, ¶¶91-93.

Mehta also discloses the needles can be marked with indicia that allows the physician to extend the needles 104 to a desired distance. EX1003, ¶94. For example, Mehta discloses the needles 104 can “include any number of visually distinguishing features (e.g., depth markings, colors, shades, etc.) that enable a physician to observe proper placement” to ensure, e.g., the needles are “not driven too far into tissue.” EX1004 at 13:37-43. Mehta also discloses the needles 104 “can be marked with one or more features that allow the physician to determine the depth of insertion of the probe.” *Id.* at 13:43-45; EX1003, ¶94.

To the extent Patent Owner contends that FIGS. 4A-4C and/or 7A are directed to separate embodiments of Mehta relative to FIGS. 2A-2D, Patent Owner would be incorrect. EX1003, ¶¶95-96. Mehta introduces FIGS. 4A and 4B as “show[ing] variations of cartridge bodies for use with variations of the present system,” whereby “the present system” refers back to the “treatment system 200” depicted in FIGS. 2A-2D. EX1004 at 6:41-42, 6:51-52, 9:34-55, 14:5-19, 15:27-

54. Mehta also makes clear that the disclosure regarding the “connection fastener” (mechanical connection) is meant to refer to all the variations of cartridge bodies in FIGS. 2A-D, 4A and 4B. *See* EX1004 at 16:42-46 (while “FIG. 4B shows another variation of a cartridge 100,” “any number of connection fastener configurations can be used with various cartridge assemblies of the present invention”). Further, FIG. 4C is a cross-sectional view of FIG. 4A, and FIG. 7A is showing an illustration of the same cartridge 100 as shown in FIGS. 2A-2D in the context of inserting the needles into skin. EX1003, ¶96. Thus, FIGS. 4A-4C and 7A depict implementation details of the relatively undetailed cartridge shown in a portion of Figure 2D. They are not different embodiments. *Id.*

Further, even if these were separate embodiments, Mehta expressly teaches that “[i]t is understood that the embodiments described above may be combined or the aspects may be combined.” EX1004 at 41:35-39, 6:3-6; EX1003, ¶96; *see also, e.g., Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1344 (Fed. Cir. 2016) (“[A] reference may still anticipate if that reference teaches that the disclosed components or functionalities may be combined and one of skill in the art would be able to implement the combination.”).

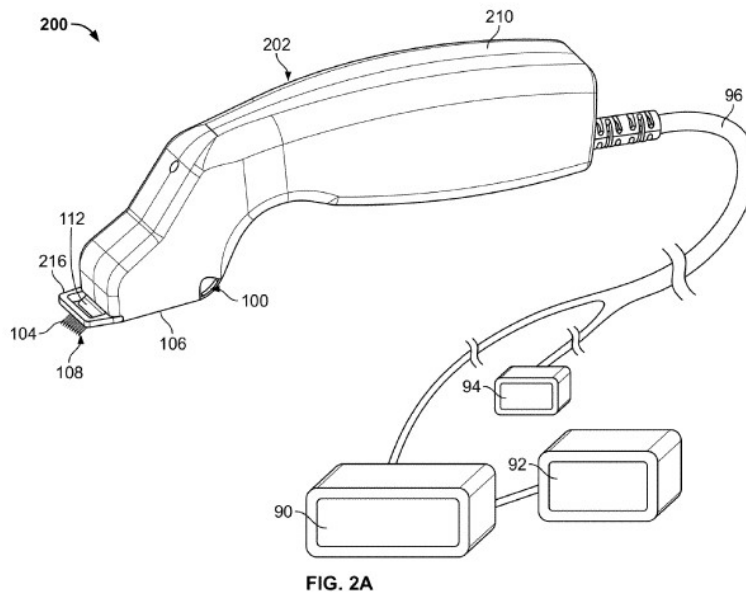
Accordingly, Mehta discloses Element [1a].

- (c) **[1b] directing a signal generator electrically coupled to the plurality of extended needles to produce pulsed radio frequency signals across the plurality of needles**

to affect dermatological tissue near the plurality of needles.

Mehta discloses directing a signal generator electrically coupled to the plurality of extended needles to produce pulsed radio frequency signals across the plurality of needles to affect dermatological tissue near the plurality of needles as recited in Element [1b]. EX1003, ¶¶99-105. Mehta discloses the energy supply unit 90 is electrically coupled to the probes 104. EX1004 at 9:34-55, 10:17-32, 10:53-65, 15:55-16:11, FIGS. 2A, 4A; EX1003, ¶¶100-102.

Mehta discloses the signal generator is directed to produce pulsed radio frequency signals across the plurality of needles to affect dermatological tissue near the plurality of needles. EX1003, ¶¶103-104. Mehta teaches that “energy supply unit 90 may be a RF energy unit” which supplies RF energy, EX1004 at 11:14-15, FIG. 2A (below), and that energy supply unit 90 contains software and hardware to “control energy delivery” (*id.* at 10:53-59) via needles 104. *Id.* at 2:37-57, 9:43-51; EX1003, ¶¶101-103. When Mehta’s system is used to provide treatment, the signal generator 90 is directed to produce pulsed RF energy. EX1004 at 10:53-11:13, 12:5-14, 20:16-19, 20:21-28; EX1003, ¶104.



Mehta-FIG. 2A

Mehta further teaches that the RF energy (produced by energy supply unit 90 and delivered via needles 104) may be advantageously “delivered in a pulsed fashion or for a specific duty cycle,” and also that the RF energy “can be pulsed so that temperature measurements can be taken between the pulsed deliveries of energy.” EX1004 at 20:13-28; EX1003, ¶103. Like the ’774 patent, Mehta teaches that these pulses of RF energy may be delivered in the form of a “square wave.”⁶ EX1004 at 20:29-35; EX1003, ¶103; EX1001 at 10:20-50, 6:13-7:10

⁶ RF energy in the form of a square wave satisfies both interpretations of “pulsed radio frequency signals” advanced at the ITC mentioned above in Section VII, as square waves are “normally off and suddenly on for a period of time (i.e., a rapid, transient change from a baseline to a different amplitude, followed by rapid return to baseline)” and are also “normally off with an amplitude of zero and is suddenly

(describing that “radio frequency (RF) signal generator (RFSG) module 911A” of the ’774 patent applies the square wave pulsed signals depicted in FIGS. 5A, 5B and 6 of the ’774 patent).

Mehta discloses “percutaneously delivering energy to tissue” in a precisely controlled manner via probes (needles) to affect dermatological tissue near the plurality of needles—for example, to “shrink collagen tissue in the dermis” and to treat “skin surface imperfections and blemishes.” EX1004 at 2:37-57, Title; EX1003, ¶104. Mehta therefore discloses Element [1b].

2. Dependent Claim 2

Mehta discloses “placing a device end surface on or near dermatological tissue to be treated, the end surface including a plurality of needles extendable a desired distance from the end surface,” as recited in claim 2. EX1003, ¶¶106-112.

To the extent Patent Owner interprets “[device] end surface” and “[device] surface” in the ’774 patent claims as referring to the same surface, this is an incorrect interpretation of the claim language because it ignores the separate antecedents for “end surface” and “surface.” EX1003, ¶112. In any event, applying such an interpretation, Mehta anticipates claim 2 for the reasons discussed in Section IX.A.1(b) regarding Element [1a]. *Id.*

on with a constant amplitude for a brief portion of time.” EX1003, ¶103; EX1001 at 10:20-50, 6:13-7:10; EX1007 at 36.

Mehta also anticipates claim 2 under the correct interpretation of “device end surface” as meaning a surface other than the “device surface” of claim 1. For example, in addition to a device surface as discussed above in Section IV.A.1(b), Mehta discloses a stabilization plate 214 having a device end surface including a plurality of needles extendable a desired distance from this device end surface. EX1004 at 10:40-52, 13:16-36, FIGS. 2A-2C; EX1003, ¶110.

Mehta also discloses the cartridge 100 has a device end surface (highlighted in red below) including a plurality of needles extendable a desired distance from this device end surface, which is a different surface relative to tissue engaging surface 106 discussed above in Section IX.A.1(b). EX1004 at 15:27-45, FIG. 4A (reproduced below); EX1003, ¶107. During treatment, the device end surface, located on the front portion 112, is placed on or near dermatological tissue to be treated by an active area 122 of the needle 104. EX1004 at 21:22-42, 22:7-17, FIGS. 7A-7B; EX1003, ¶108.

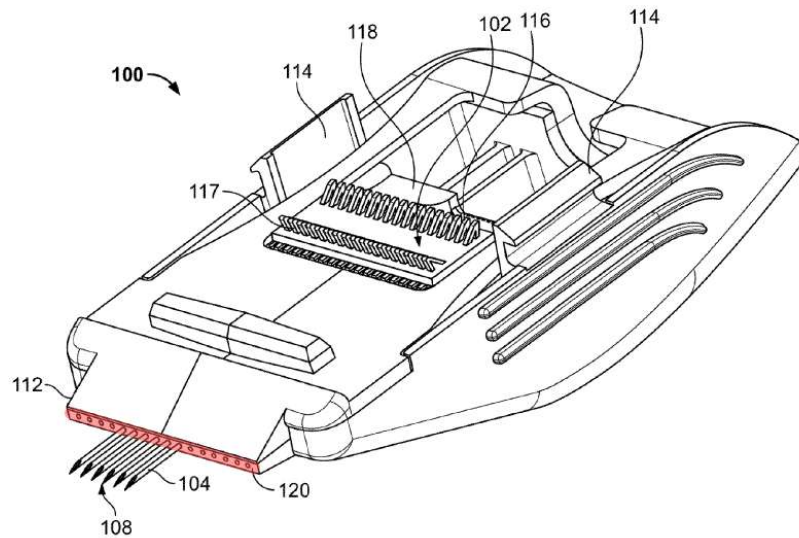


FIG. 4A

Mehta-FIG. 4A

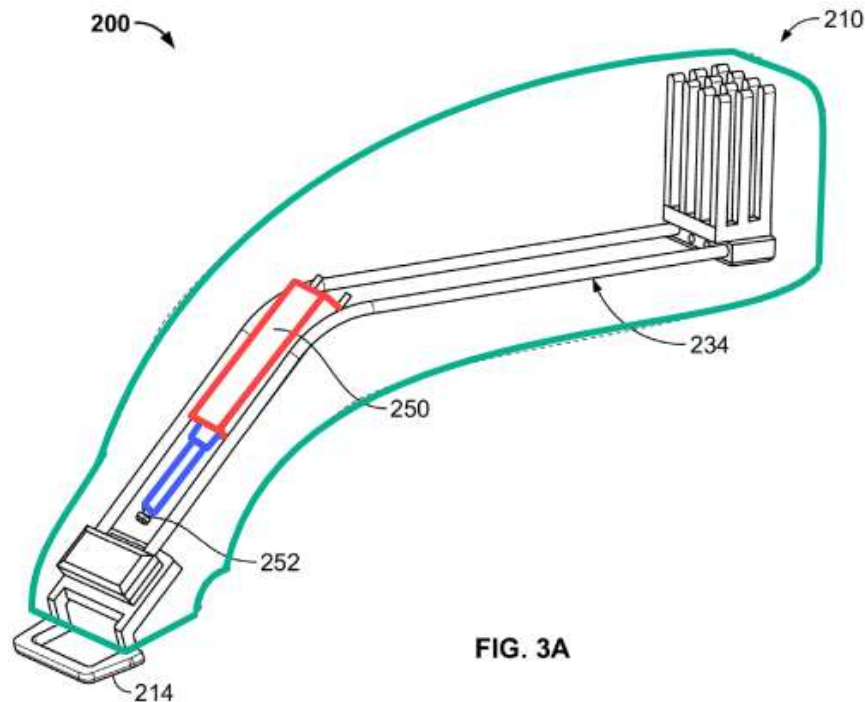
3. Dependent Claims 3 and 4

Mehta discloses “causing the plurality of the extendable needles to extend a desired distance from the end surface,” as recited in claim 3 which depends from claim 2. EX1003, ¶¶113-116. Mehta also discloses “energizing a motor coupled to the plurality of extendable needles to cause the plurality of the extendable needles to extend a desired distance from the end surface,” as recited in claim 4 which depends from claim 2. EX1003, ¶¶117-121.

As discussed above in Section IX.A.2, Mehta discloses a plurality of needles 104 that are “extendable a desired distance from the end surface,” and, as discussed in Section IX.A.1(b), the motor 250 causes the needles 104 to extend the “desired distance.” Mehta further teaches insertion/advancement of the needles 104 for treatment purposes, which includes causing the extendable needles 104 to be

extended a desired distance from the end surface. *See, e.g.*, EX1004 at 12:28-30 (“the array 108 can then be inserted into the tissue 10 when advanced from a cartridge 100”), 13:24-33, 21:4-8; EX1003, ¶114.

Mehta also teaches that the extension of the extendable needles 104 is achieved by energizing a motor. EX1004 at 10:33-39, 13:58-14:4, 15:34-40, 18:21-37; EX1003, ¶115. For example, Mehta discloses an actuator 250 (within the device body 210 of the treatment unit 202) coupled to the array of needles 108 that drives the needles 104 into tissue using a shaft 252. EX1004 at 13:58-61, FIG. 3A (annotated below); EX1003, ¶¶118-120. Mehta further teaches that the motor 250 is coupled to the needle assembly 102 “via a coupling portion 118...to advance and retract” the needles 104, EX1004 at 18:27-30, with “sufficient force, speed or impact to” the needles “to drive them into tissue.” *Id.* at 13:63-65; 4:63-5:2; 9:40-64, 12:31-58, 13:65-14:1, 21:1-13, 21:34-42, FIGS. 2B, 7A, 7B, and 7C; EX1003, ¶120.



Mehta-FIG. 3A

Accordingly, Mehta anticipates claims 3 and 4.

4. Dependent Claims 5 and 6

Mehta discloses “placing a device inner surface on or near dermatological tissue to be treated, the inner surface including a plurality of needles extending a desired distance from the inner surface,” as recited in claim 5 which depends from claim 1. EX1003, ¶¶122-126. Mehta also discloses “placing a device inner surface on or near dermatological tissue to be treated, the inner surface including a plurality of needles extending a desired distance from the inner surface with a force sufficient to cause the plurality of needles to penetrate the dermatological tissue,” as recited in claim 6 which depends from claim 1. EX1003, ¶¶127-128.

Claims 5 and 6 cover needles extending a fixed length relative to the claimed “inner surface,” which is a term that appears only in the claims. EX1003, ¶¶122, 127. Mehta discloses needles 104 extending a fixed length from an inner surface of the cartridge 100. *Id.*, ¶¶123, 127.

Mehta discloses the cartridge 100 has a device inner surface (highlighted in blue) including a plurality of needles extending a desired, fixed distance therefrom. EX1004 at FIGS. 4B-4C (below). The device inner surface is a different surface relative to the device surface discussed above in Section IX.A.1(b) and the device end surface discussed above in Section IX.A.2 (highlighted in red). EX1004 at 16:42-58, FIG. 4B-4C; *supra* Sections IX.A.1(b), IX.A.2; EX1003, ¶¶123, 127.

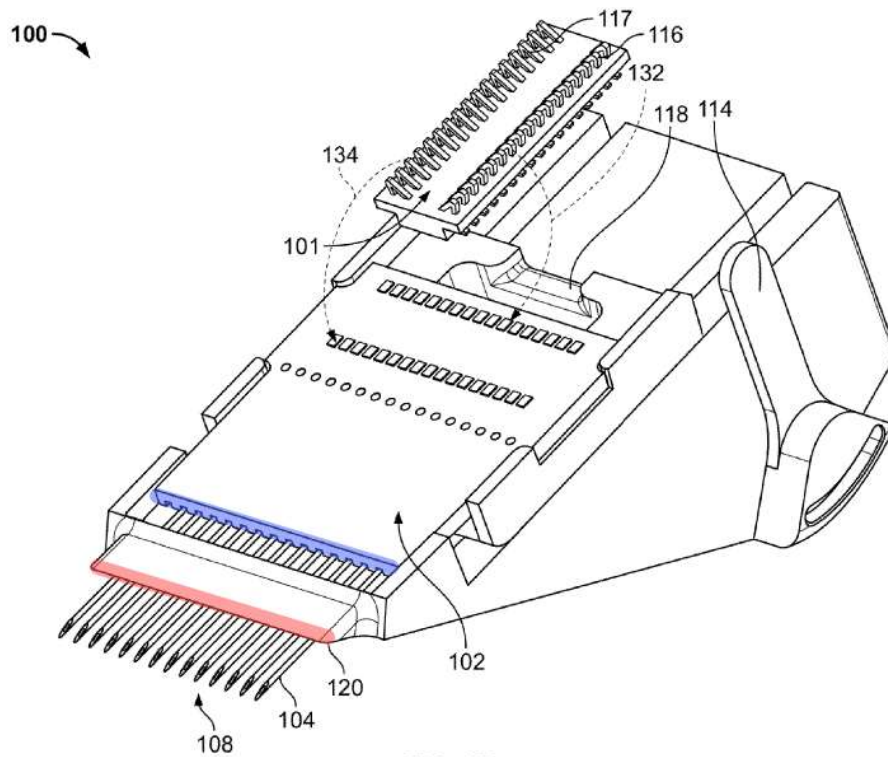


FIG. 4B

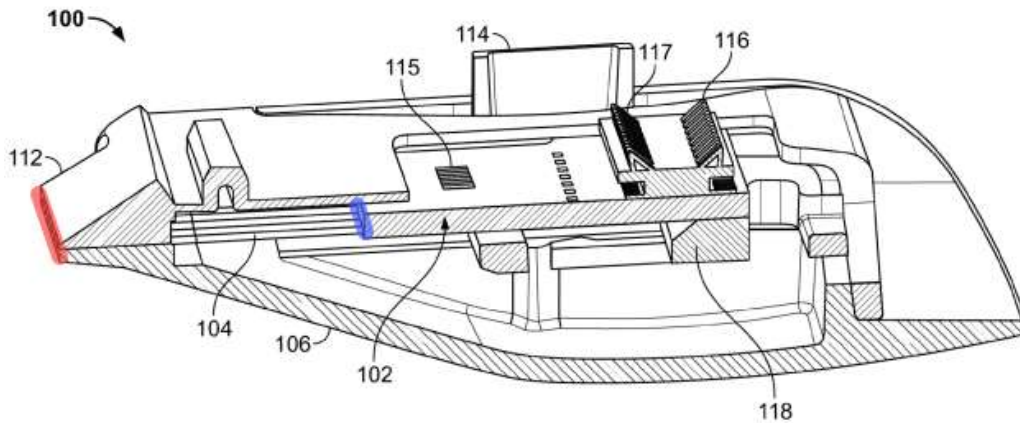


FIG. 4C

Mehta-FIGS. 4B-4C

Mehta teaches that the assembly 102 and the needles 104 are slidable within the cartridge 100. EX1004 at 14:14-19, 15:34-54, 16:42-58, FIGS. 4A, 4B. A

POSA would have understood therefore that the needles 104 and the assembly 102 have a fixed relationship, such that the needles 104 extend from the device inner surface (blue) on assembly 102 in a fixed manner (while also being extendable from a device end surface (such as the red surface) and a device surface (such as tissue engaging surface 106)). The device inner surface (blue) is also inward with respect to the device end surface (red) and the device surface. EX1003, ¶124.

Additionally, when the cartridge 100 is used for treatment, at least the device inner surface is placed near dermatological tissue to be treated, and the needles 104 are inserted with sufficient force to penetrate the dermatological tissue. EX1004 at FIG. 2B, 16:42-58, FIG. 4B, 13:65-14:1; EX1003, ¶125. Mehta teaches that a motor is coupled to the needle assembly 102 “via a coupling portion 118...to advance and retract” the needles 104, EX1004 at 18:27-30, with “sufficient force, speed or impact to” the needles “to drive them into tissue.” Id. at 13:63-65; EX1003, ¶127.

Mehta therefore anticipates claims 5 and 6.

5. Dependent Claims 7 and 9

Mehta discloses “directing a signal generator electrically coupled to the plurality of needles to produce pulsed radio frequency signals across the plurality of needles to form a bipolar pair,” as recited in claim 7 which depends from claim 1. EX1003, ¶¶129-132. Mehta also discloses “directing a signal generator

electrically coupled to the plurality of needles to produce pulsed radio frequency signals across the plurality of needles, the plurality of needles to form a bipolar pair and affect dermatological tissue near the bipolar pair,” as recited in claim 9 which depends from claim 1. EX1003, ¶¶133-134.

As discussed above in Section IX.A.1(c), Mehta teaches directing a signal generator electrically coupled to the plurality of needles to produce pulsed radio frequency signals across the plurality of needles. Mehta further discloses that pulsed RF signals are delivered using bipolar electrode pairs and that the pulsed RF signals affect dermatological tissue near the bipolar electrode pairs. EX1004 at 17:59-66 (“each electrode pair 105 can include an active and return probe 104... adjacent electrode pairs can serve as opposite poles of a circuit”), 18:4-8, 9:43-48 (“bipolar RF”), 36:20-25, 37:25-34 (describing pairs of an “active” and a “return” needle and passing current between needles “of opposite polarity”), cl. 1; EX1003, ¶¶130-131. When pulsed RF signals are provided to the needle bipolar pair, dermatological tissue in the near the pair is affected. Mehta teaches that “[t]he application of heat to the fibrous collagen structure in the dermis 18 causes the collagen to dissociate and contract along its length,” which “causes the dermis 18 to reduce in size” (*id.* at 8:54-59) and, as a result, “wrinkles, lines, and other distortions become less visible.” *Id.* at 8:60-61; *supra* Section IX.A.1(c)

(discussing how dermatological tissue is affected by the produced pulsed RF signals); EX1003, ¶133. Mehta therefore anticipates claims 7 and 9.

6. Dependent Claim 10

Mehta discloses “directing the signal generator to produce periodic pulsed radio frequency signals across the plurality of needles for a predetermined time interval, each pulse having a width,” as recited in claim 10 which depends from claim 1. EX1003, ¶¶135-137. As discussed above in Section IX.A.1(c), Mehta teaches directing a signal generator electrically coupled to the plurality of needles to produce pulsed radio frequency signals across the plurality of needles, and that the pulsed radio frequency signals may be produced in the form of a square wave. A square wave has periodic pulses which have a width and a predetermined time interval corresponding to the time from the start of one pulse to the next. EX1003, ¶135. Further, Mehta discloses directing the signal generator to produce pulsed RF signals in a periodic manner, including in the form of periodic square waves. EX1004 at FIG. 6, 20:13-47; EX1003, ¶135. Mehta also discloses producing pulsed RF signals across the plurality of needles for a predetermined treatment time interval. EX1004 at FIG. 9E (element 442 (“Treatment Time Elapsed?”), 27:65-28:50 (“Step 2. Set treatment time between (3 and 5 sec)... Step 9. Continue applying RF until treatment time is complete.”); EX1003, ¶136. Mehta therefore anticipates claim 10.

7. Independent Claim 11

Mehta anticipates claim 11. EX1003, ¶¶138-144.

(a) [11pre] An apparatus for treating dermatological tissue

Mehta discloses an apparatus for treating dermatological tissue. EX1003, ¶¶139-141; *supra* Section IX.A.1(a) (regarding Element [1pre]); EX1004 at 1:14-19, 2:37-43.

(b) [11a] a device including a plurality of needles one of extending or extendable a desired distance from a surface, the desired distance selected to enable the plurality of needles to penetrate dermatological tissue

Mehta discloses “a device including a plurality of needles one of extending or extendable a desired distance from a surface,” as recited in Element [11a]. EX1003, ¶¶142-143; *supra* Section IX.A.1(b) (regarding [1a]). Mehta also discloses the desired distance is selected to enable the plurality of needles to penetrate dermatological tissue. EX1003, ¶143; *supra* Section IX.A.1(b), Section IX.A.4. For example, Mehta discloses that the needles extend a distance “able to penetrate tissue.” EX1004 at 12:31-58; 4:63-5:2; 9:40-64, 13:63-14:1, 21:1-13, 21:34-42, FIGS. 2B, 7A, 7B, and 7C; EX1003, ¶143.

(c) [11b] a signal generator electrically coupled to the plurality of extended needles to produce pulsed radio frequency signals across the plurality of needles to

**affect dermatological tissue near the plurality of
needles**

Mehta discloses Element [11b]. EX1003, ¶144; *supra* Section IX.A.1(c)
(regarding Element [1b]).

8. Dependent Claim 12

Mehta anticipates claim 12. EX1003, ¶145; *supra* Section IX.A.2 (regarding
claim 2).

9. Dependent Claims 13 and 14

Mehta anticipates claims 13 and 14. EX1003, ¶¶146-147; *supra* Section
IX.A.3 (regarding claims 3 and 4, respectively).

10. Dependent Claim 15

Mehta anticipates claim 15. EX1003, ¶148; *supra* Section IX.A.4 (regarding
claim 5).

11. Dependent Claims 16 and 17

Mehta anticipates claims 16 and 17. EX1003, ¶¶149-150; *supra* Section
IX.A.5 (regarding claims 7 and 9, respectively).

12. Dependent Claim 18

Mehta anticipates claim 18. EX1003, ¶151; *supra* Section IX.A.6 (regarding
claim 10).

B. Ground II: Mehta and Na '848 Render Claims 8, 19, and 20 Obvious

Claims 8, 19, and 20 would have been obvious to a POSA under Section 103 in view of Mehta and Na '848. EX1003, ¶¶152-166.

1. The Mehta-Na '848 Combination

It would have been obvious to a POSA prior to the earliest possible priority date of the '774 patent to combine Mehta with Na '848 to arrive at the subject matter of claims 8, 19, and 20. EX1003, ¶¶153-160. Na '848 contains the same disclosure as the '774 patent with regard to utilizing pulsed signals having a predetermined time interval in the range of 100 ms to 500 ms and a pulse width in the range of 100 microseconds to 500 microseconds as recited in claims 8, 19, and 20. *Compare* EX1005 at [0039]-[0040], FIGS. 5A-5B *with* EX1001 at 6:13-58, FIGS. 5A-5B.

A POSA would have been motivated to combine Mehta and Na '848 because they are directed to similar technologies and a skilled artisan would have understood the benefits of combining these two references. EX1003, ¶¶153-154. A POSA would have understood that there was a high likelihood of success in making the combination. *Id.*

Each of Mehta and Na '848 is analogous art with respect to the '774 patent. *See Circuit Check Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 2015); *In re Deminski*, 796 F.2d 436, 442 (Fed. Cir. 1986). Mehta and Na '848 are both in the

same field of endeavor as the challenged claims of the '774 patent and are both reasonably pertinent to the problem faced by the inventor, namely methods and apparatuses for treating dermatological tissue. *Compare* EX1001, claims 8, 19, and 20 *with* EX1004 at 1:14-19, 5:3-6, 19:17-19, 24:46-47 and with EX1005 at [0002], cl. 1, Title; EX1003, ¶¶155-156.

Mehta and Na '848 are readily combinable because both references are directed to systems and methods of treating dermatological tissue using needles energized while extending into tissue. It therefore would have been obvious to a POSA to apply advantageous teachings of Na '848 to Mehta's treatment system. EX1003, ¶156.

A POSA would have been motivated to use and configure the Mehta system following the time interval and pulse width parameters that Na '848 teaches are efficacious with regard to affecting dermatological cells to treat a patient's skin, in order to optimize treatments provided using the Mehta system. EX1003, ¶157. Na '848 provides compelling reasons to combine its teachings with those of Mehta. In particular, it would have been obvious to a POSA to implement the pulsed RF signals of Mehta using the time interval and pulse width parameters taught by Na '848 to achieve the benefits associated therewith, as Mehta teaches that its controller can adjust energy application and/or parameters thereof depending on where the treatment is applied, the anatomy of the target tissue, and the desired

therapeutic effect (EX1004 at 18:64-19:8), and Na '848 teaches a specific time interval parameter range ("100 ms to 500 ms") and pulse width parameter range ("100 microsecond (μ s) to 500 μ s") which "affect [dermatological] cells or chemicals" in the context of treating the dermatological cells on a patient's face, arm, leg, chest, hands, feet, neck or other region. EX1005 at [0039]-[0040], [0036]; EX1003, ¶157. Using the Mehta system with the Na '848 interval and pulse width ranges would merely constitute "optimization of a range or other variable within the claims that flows from the 'normal desire of scientists or artisans to improve upon what is already generally known.'" *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1368 (Fed. Cir. 2007); EX1003, ¶158.

A claim can be shown to be obvious "by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419-20 (2007). Na '848 discloses the problem of treating dermatological tissue and discloses configuring the controller 54 to emit electrical signal waveforms to the pins 230, 351, 451 periodically P1 for a predetermined interval T1, where the pulse width T1 is about 100 microseconds to 500 microseconds and the period P1 is about 100 ms to 500 ms to affect dermatological cells as a solution to overcome this problem. EX1005 at [0039]-[0040], [0036]; EX1003, ¶160.

A POSA would have known and understood that the pulse width and time interval parameters disclosed by Na '848 are suitable and advantageous for pulsed radio frequency signals because Na '848 teaches that the “signal generator or module 270 may generate a vary[*sic*, variety] of signals (such as shown in FIGS. 5A to 6) to vibrate one or more pins 351 electrically coupled to the system 300,” and that the signal waveforms 630 and 640 include “several square-wave pulses” applied to needles⁷ as is found in the '774 patent. *Compare* EX1005 at FIGS. 2A, 5B, [0026]-[0028], [0040] *with* EX1001 at FIGS. 2A, 5B, 3:38-4:15, 6:32-58; EX1003, ¶159. Furthermore, a POSA would have known and understood that the disclosed Na '848 signal generator 370 includes one that produces pulsed radio frequency signals, especially as Na '848 claims priority to and incorporates a Korean application which teaches the use of RF energy. EX1005 at [0001], EX1022 at [0010], [0017], cl. 5; EX1003, ¶159. Mehta also discloses the benefits of utilizing RF energy for treatment of skin were well-known, as Mehta's background discusses prior art going back to 1995 that recognized the advantages of using “radio frequency energy” to achieve a “cosmetically beneficial effect.” EX1004 at 1:43-64. Thus, one of ordinary skill would have been motivated to implement Na '848's teachings concerning the desirable period and pulse width of

⁷ The term “pins” is used interchangeably with the term “needles” throughout Na '848 and the '774 patent. EX1003, ¶¶62,172.

the signal waveform to the Mehta method and apparatus for treating dermatological tissue in a manner that advantageously affects dermatological cells. EX1003, ¶159.

A skilled artisan would have combined Mehta and Na '848 and would have had a reasonable expectation of success in doing so as the variable control of the RF energy supply unit 90 already was disclosed by Mehta. EX1004 at 12:5-14; EX1003, ¶160. When the prior art identifies a problem and provides express guidance on how to fix the problem as in Na '848, a skilled artisan would have had a reasonable expectation of success in combining the prior art. *See, e.g., In re Inland Steel Co.*, 265 F.3d 1354, 1364 (Fed. Cir. 2001). Because the combination of Mehta and Na '848 is merely the predictable use of interchangeable prior art elements according to their established functions, it supports a finding of obviousness. *See KSR*, 550 U.S. at 416. This combination is not of innovation but of ordinary skill and common sense. *Id.* at 421; EX1003, ¶160. Accordingly, the combination of Mehta and Na '848 renders claims 8, 19, and 20 of the '774 patent obvious.

Additionally, this combination of Mehta and Na '848 would have yielded predictable results and required nothing more than routine engineering. EX1003, ¶160. Mehta teaches that a controller can be utilized to adjust parameters associated with application of pulsed RF signals by a signal generator to achieve a

desired therapeutic effect (EX1004 at 18:64-19:8, 20:21-55), and Na '848 teaches specific parameters which are efficacious for certain skin treatments (EX1005 at [0039]-[0040], [0036]); EX1003, ¶160. Thus, a POSA, in order to apply Na '848's parameters to Mehta's method and system, would have only needed to appropriately configure the waveform output by the signal generator using Mehta's controller, and configuring time interval and pulse width parameters of a signal waveform using a control was well within the capabilities of a POSA prior to the earliest possible effective priority date of the '774 patent. EX1003, ¶160. A POSA would have understood that this modification had a high likelihood of success and was obvious. EX1003, ¶¶153-160.

2. Dependent Claim 8

The Mehta-Na '848 combination includes “the predetermined time interval is about 100 ms to 500 ms and the pulse width is about 100 microseconds to 500 microseconds,” as recited in claim 8. EX1003, ¶¶161-162. As discussed above in Sections IX.A.1 and IX.A.5, Mehta discloses all of the limitations of claims 1 and 7. Further, as discussed above in Section IX.B.1, Na '848 discloses pulsed signals having a predetermined time interval in the range of 100 ms to 500 ms and a pulse width in the range of 100 microseconds to 500 microseconds (using the same description and figures as the '774 patent). EX1005 at [0039]-[0040], FIGS. 5A-5B. And for the reasons discussed above in Section IX.B.1, it would have been

obvious to a POSA to have combined these teachings of Na '848 regarding time interval and pulse width parameters with the teachings of Mehta regarding production of pulsed RF signals for dermatological treatment. EX1003, ¶¶161-162. Accordingly, the Mehta-Na '848 combination renders claim 8 obvious.

3. Dependent Claims 19 and 20

The Mehta-Na '848 combination renders claims 19 and 20 obvious. EX1003, ¶¶163-166. Mehta anticipates claims 11 and 18. *Supra* Sections IX.A.7 and IX.A.12 (regarding claims 11 and 18). The Mehta-Na '848 combination includes “the predetermined time interval is about 100 ms to 500 ms,” as recited in claim 19, and “the pulse width is about 100 microseconds to 500 microseconds,” as recited in claim 20. EX1003, ¶¶161-166; *supra* Section IX.B.2 (regarding claim 8).

C. Ground III: Na '848 and Mehta Render Claims 1, 5-11, and 15-20 Obvious

Claims 1, 5-11, and 15-20 of the '774 patent would have been obvious to a POSA under Section 103 in view of Na '848 and Mehta. EX1003, ¶¶167-220.

1. The Na '848-Mehta Combination

It would have been obvious to a POSA prior to the earliest possible priority date of the '774 patent to combine Na '848 with Mehta to arrive at the subject matter of claims 1, 5-11, and 15-20. EX1003, ¶¶168-180. As discussed above in Section IX.B.1., Mehta and Na '848 are analogous art with respect to the '774

patent, and Na '848 includes the same FIGS. 2A and 5B (reproduced below) and the same description thereof as is found in the '774 patent. EX1003, ¶¶168-169, 172.

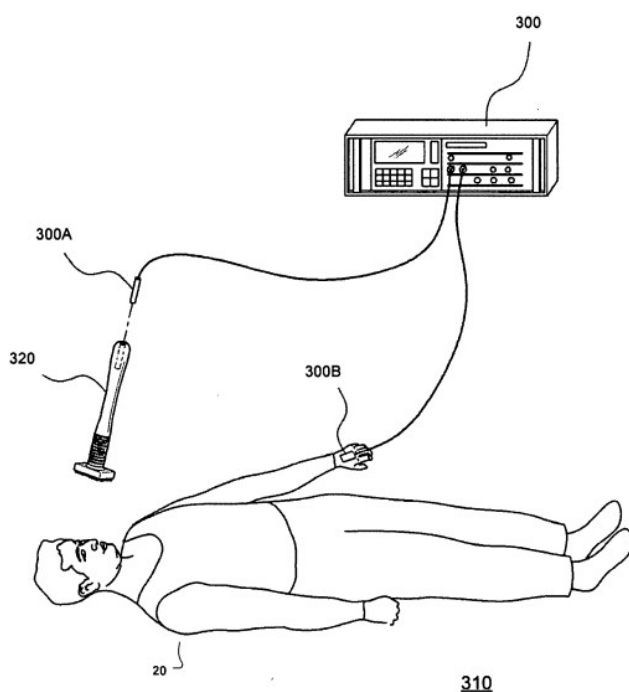


FIGURE 2A

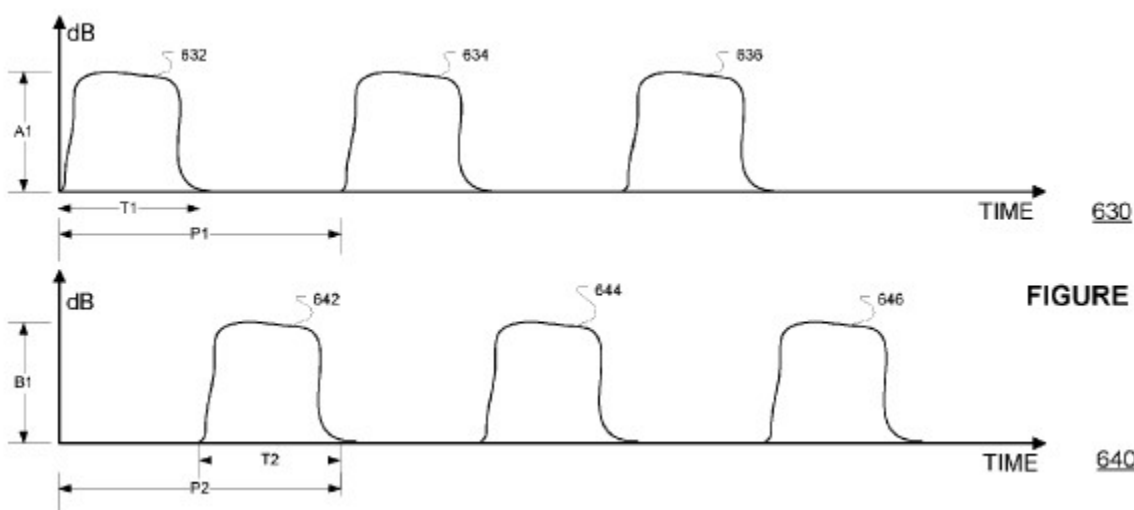
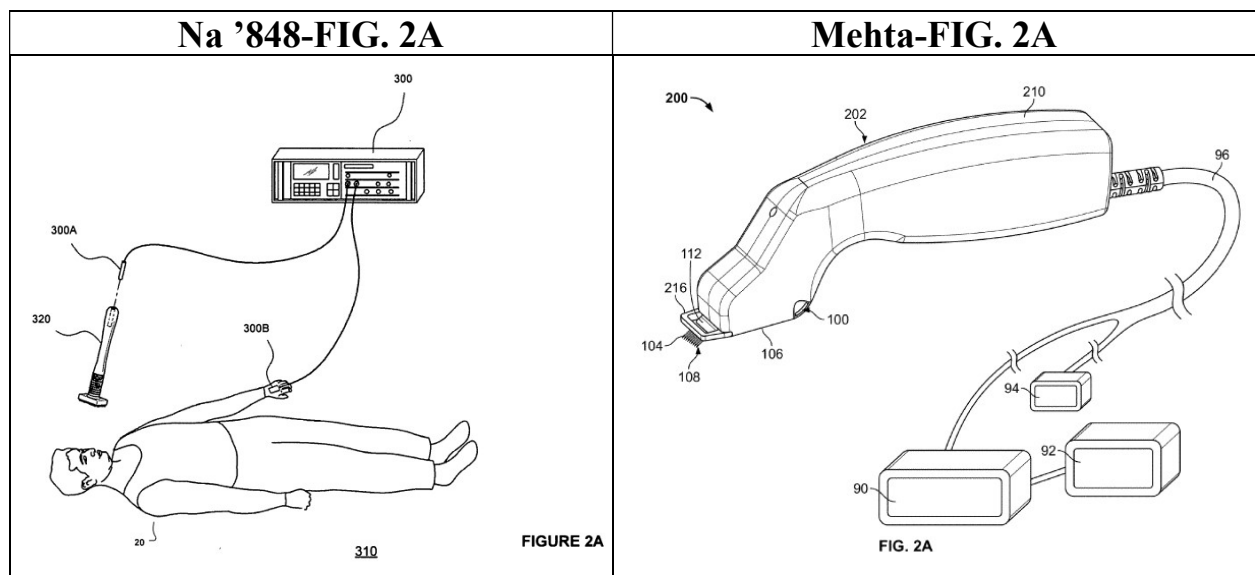


FIGURE 5B

Na '848-FIGS. 2A, 5B

A POSA would have been motivated to combine Na '848 and Mehta because they are directed to similar technologies and a skilled artisan would have understood the benefits of combining these two references. EX1003, ¶¶170-171. A POSA would have understood that there was a high likelihood of success in making the combination. *Id.* Na '848 and Mehta are readily combinable because both references are directed to systems and methods of treating dermatological tissue using needles energized while extending into tissue. EX1005 at [0025]-[0027], FIG. 2A; EX1004 at 2:37-41, FIG. 2A; EX1003, ¶¶171-172, 175.



A POSA would have been motivated to use and configure the Na '848 system in view of Mehta to include the RF signal generator taught by Mehta. EX1003, ¶173. Mehta provides compelling reasons to combine its teachings with those of Na '848. First, Mehta discloses the benefits of utilizing RF energy for treatment of skin were well-known, as Mehta's background discusses prior art

going back to 1995 that recognized the advantages of using “radio frequency energy” to achieve a “cosmetically beneficial effect,” (EX1004 at 1:43-64), and, second, Mehta teaches the use of RF energy to advantageously “denature or coagulate collagen in a dermal layer” for skin treatment. EX1004 at 24:46-60; EX1003, ¶¶171-173. Further, Na ’848 claims priority to and incorporates a Korean application which teaches the use of RF energy in connection with the microneedling apparatus depicted in FIG. 2C of the ’774 patent. EX1005 at [0001]; EX1022 at [0010], [0017], cl. 5. It therefore would have been obvious to a POSA to apply advantageous principles regarding RF energy discussed in Mehta to the Na ’848 treatment system. EX1003, ¶174.

A claim can be shown to be obvious “by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *KSR*, 550 U.S. at 419-20. Mehta discloses the problem of treating dermatological tissue and discloses using an RF signal generator to beneficially affect dermatological cells as a solution to overcome this problem. EX1004 at 1:43-64, 24:46-60; EX1003, ¶¶175-176. Thus, one of ordinary skill would have been motivated to configure the Na ’848 treatment system such that it includes the Mehta RF signal generator, and a POSA would have been motivated to do so to enable the Na ’848 treatment system to achieve the well-

known benefits of utilizing RF energy for skin treatment as taught in Mehta.

EX1004 at 1:43-64, 24:46-60; EX1003, ¶176.

A skilled artisan would have combined Na '848 and Mehta and would have had a reasonable expectation of success in doing so as Na '848 disclosed that the Na '848 system includes a signal generator that may generate a variety of different signals (EX1005 at [0027]-[0028]), and Mehta disclosed that an RF signal generator produced a beneficial effect. EX1004 at 1:43-64, 24:46-60; EX1003, ¶177. When the prior art identifies a problem and provides express guidance on how to fix the problem as in Mehta, a skilled artisan would have had a reasonable expectation of success in combining the prior art. *See, e.g., Inland Steel*, 265 F.3d at 1364.

Further, modifying the Na '848 treatment system such that it includes the Mehta RF signal generator would have yielded entirely predictable results with regard to improving the efficacy of the skin treatment administered via the needles of Na '848. EX1003, ¶178. Mehta teaches what would happen in the case of pulsed RF signals being applied during an RF microneedling treatment (EX1004 at 1:43-64, 20:13-47, 24:46-60). The '774 patent itself treats the use of an RF signal generator to produce the claimed pulsed RF signals in the form of square-wave signals as a matter that would have been well understood by a POSA without needing any explanation, as there is no disclosure in the '774 patent regarding how

the claimed pulsed RF signals are to be produced other than saying that a “radio frequency signal generator (RFSG)” may be used to produce the square wave pulses of FIGS. 5A-6. EX1001 at 10:20-21, 10:48-50; EX1003, ¶178. Because the combination of Na ’848 and Mehta is merely the predictable use of interchangeable prior art elements according to their established functions, it supports a finding of obviousness. *See KSR*, 550 U.S. at 416. Further, to the extent that a POSA, prior to the earliest possible priority date of the ’774 patent, was deciding what type of signal generator to use in the Na ’848 treatment system, there were a “finite number of identified, predictable solutions” available, and it would have been obvious to use an RF signal generator in view of Mehta’s teachings regarding the advantages associated therewith. *Id.* at 421; EX1003, ¶179. This combination is not of innovation but of ordinary skill and common sense. *KSR*, 550 U.S. at 421; EX1003, ¶179. Accordingly, the combination of Na ’848 and Mehta renders claims 1, 5-11, and 15- 20 of the ’774 patent obvious.

2. Independent Claim 1

The Na ’848-Mehta combination renders claim 1 obvious. EX1003, ¶¶181-189.

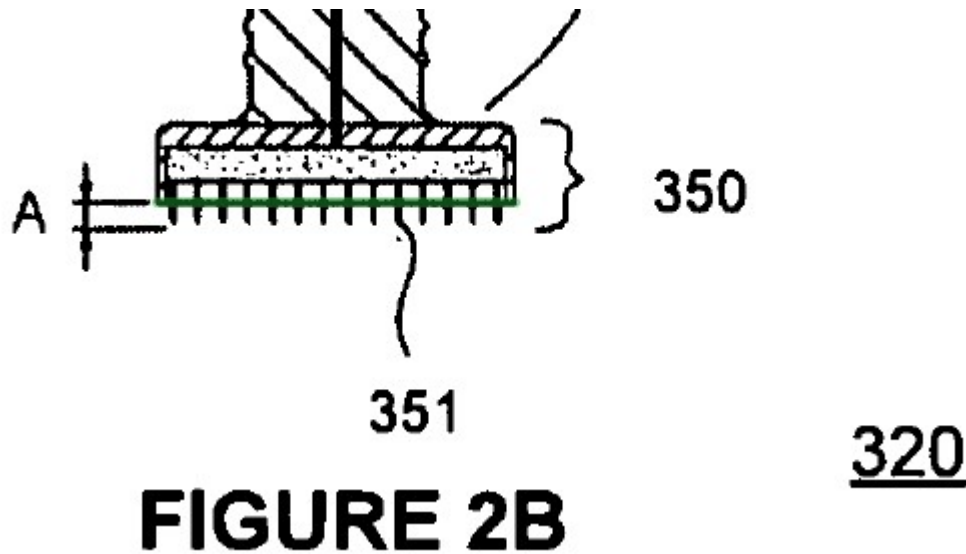
(a) Element [1pre]

Na ’848 discloses a method of treating dermatological tissue. EX1003, ¶¶182-183. Na ’848 teaches methods and system for “treating dermalogical tissue.”

EX1005 at [0002], cl. 1, Title. A POSA would have understood that “dermalogical” as used in Na ’848 is actually referring to, and has the same meaning as, “dermatological” as used in the ’774 patent. EX1003, ¶182. The ’774 patent is a continuation of the ’536 patent, and the ’774 specification simply replaced the word “dermalogical” as it appears throughout the ’536 specification (and in the overlapping portions of Na ’848) with “dermatological.” *Compare* EX1001 *with* EX1024; EX1003, ¶182. Na ’848 thus discloses Element [1pre].

(b) Element [1a]

Na ’848 discloses placing a device surface on or near dermatological tissue to be treated, the surface including a plurality of needles one of extending or extendable a desired distance from the surface, as recited in Element [1a]. EX1003, ¶¶184-186. Na ’848 discloses “a plurality of needles... extending... a desired distance from the surface.” EX1005 at FIG. 2B (below), [0026] (substantially identical to EX1001 at FIG. 2B, 3:45-54); EX1003, ¶185; *Brown*, 265 F.3d at 1351-53; *Titanium Metals*, 778 F.2d at 782. These cited portions of both Na ’848 and the ’774 patent depict and describe the “desired distance” as “length A” from a device surface (highlighted in green below). EX1003, ¶185.



Na '848-FIG. 2B (Excerpt)

Na '848 further discloses that this device surface is placed on or near dermatological tissue to be treated. EX1005 at [0042], FIG. 7A (substantially identical to EX1001 at 7:11-28, FIG. 7A); EX1003, ¶185. The Na '848-Mehta combination thus includes Element [1a].

(c) Element [1b]

The Na '848-Mehta combination includes “directing a signal generator electrically coupled to the plurality of extended needles to produce pulsed radio frequency signals across the plurality of needles to affect dermatological tissue near the plurality of needles,” as recited in includes Element [1b]. EX1005 at FIGS. 2A, 5B, [0026]-[0028], [0040]); EX1003, ¶¶187-189; *supra* Section IX.C.1. Na '848 discloses that “electrical signal generation system 300 may generate a vary[sic] of signals (such as shown in FIGS. 5A to 6) to vibrate one or more pins

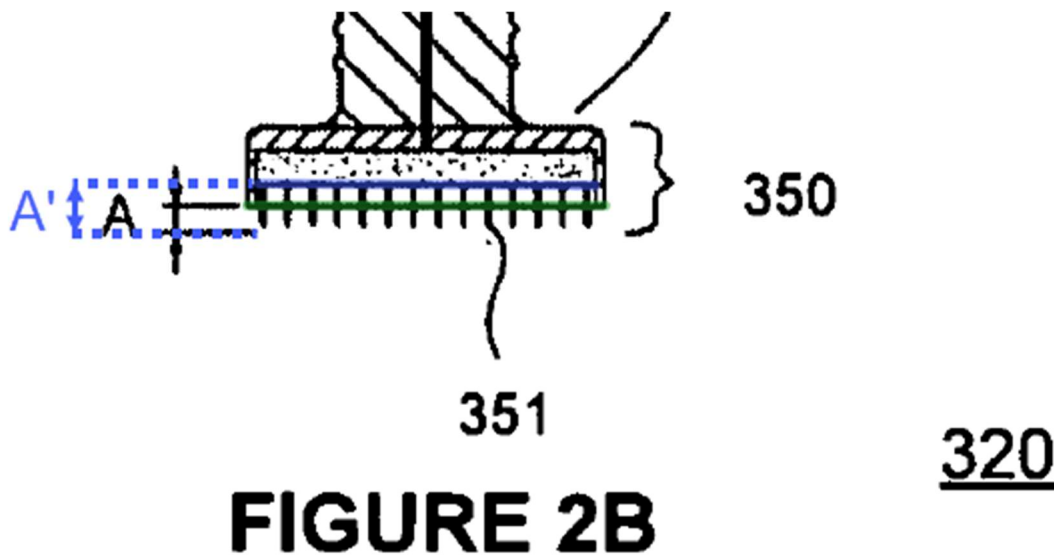
351 electrically coupled to the system 300 via the internal wire 331 and lead 300A,” and that the pin vibration affects dermatological tissue by “increas[ing] the micro-wound or cut formed in dermis by the pin 351.” EX1005 at [0027]; EX1003, ¶187. Na ’848 discloses the signals shown in FIGS. 5A-6, applied to the pins, include pulsed square wave signals. EX1005 at [0039]-[0041]; EX1003, ¶187. When the Na ’848 system is used to provide treatment, the signal generator (300) is directed to produce the pulsed signals. EX1005 at [0027], [0042], FIGS. 5A-5B, 7A; EX1003, ¶187.

Further, it would have been obvious to a POSA to modify Na ’848 in view of Mehta to arrive at Element [1b]. As discussed above in Sections IX.A.1(c) and IX.C.1, Mehta discloses an RF signal generator which produces pulsed RF signals in an RF microneedling device used to provide dermatological treatment. Further, as discussed above in Section IX.C.1, a POSA would have been motivated to modify the Na ’848 system with the Mehta RF signal generator to produce pulsed RF signals in view of Mehta’s teachings regarding the advantages of utilizing pulsed RF signals for dermatological treatment, and the combination of Na ’848 and Mehta would have merely involved known components performing their established functions and yielded predictable results. EX1003, ¶188.

3. Dependent Claims 5 and 6

Na ’848 discloses the limitations of claims 5 and 6. EX1003, ¶190-194.

Claims 5 and 6 cover needles extending a fixed length relative to the claimed inner surface. EX1003, ¶¶190, 193. Na '848 discloses apparatus 320 has a device inner surface (highlighted in blue below) including a plurality of needles extending a desired distance (annotated as A' below) from this inner surface, which is a different surface relative to the device surface (highlighted in green below) discussed above in Section IX.C.2(b). EX1005 at [0026], FIG. 2B (excerpt reproduced below), [0030], FIG. 2F; *supra* Section IX.C.2(b); EX1003, ¶190. A POSA would have understood that when apparatus 320 is used for treatment, the device inner surface is at least placed near dermatological tissue to be treated, and needles 351 are inserted with sufficient force to penetrate the dermatological tissue. EX1005 at [0042], FIG. 7A; EX1003, ¶¶191, 193. Therefore, the Na '848-Mehta combination renders obvious claims 5 and 6.



Na '848-FIG. 2B (Excerpt)

4. Dependent Claims 7 and 9

Na '848 discloses the limitations of claims 7 and 9. EX1003, ¶¶195-197, 201-203.

As discussed above in Section IX.C.2(c), Na '848 in view of Mehta renders obvious directing a signal generator electrically coupled to the plurality of needles to produce pulsed radio frequency signals across the plurality of needles. Na '848 further teaches bipolar operation of the signal generator to form bipolar pairs among the plurality of needles when applying pulsed signals (EX1005 at [0029]), and teaches that producing the pulsed signals affects dermatological tissue near the needles by “increas[ing] the micro-wound or cut formed in the dermis by the pin 351.” *Id.* at [0027]-[0028]); EX1003, ¶195.

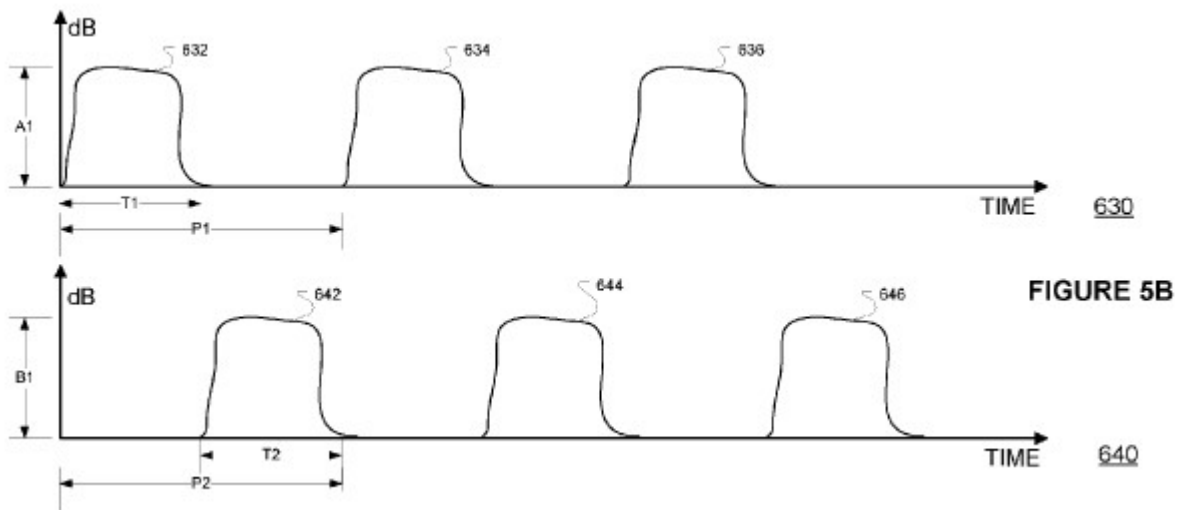
Further, Mehta teaches that pulsed RF signals are delivered using bipolar electrode pairs and that the pulsed RF signals affect dermatological tissue near the bipolar electrode pairs. *Supra* Section IX.A.5; EX1003, ¶¶129-132, 196, 201-202. It would have been obvious to a POSA to have used the Na '848-Mehta combination as described in Mehta, and a POSA would have been motivated to do so to obtain the therapeutic benefits taught in Mehta. EX1003, ¶197.

Therefore, the Na '848-Mehta combination renders obvious claims 7 and 9.

5. Dependent Claim 8

Na '848 discloses the limitations of claim 8. EX1003, ¶¶198-200.

Na '848 discloses that period P1, P2 of the pulsed signals depicted in FIG. 5B “may [be] from 100 ms to 500 ms” and that the pulse width T1, T2 of the pulsed signals depicted in FIG. 5B “may be about 100 microsecond (μ s) to 500 μ s.” EX1005 at [0040], FIG. 5B; EX1003, ¶198.



Na '848-FIG. 5B

Accordingly, it would have been obvious to a POSA to use the ranges Na '848 discloses for the predetermined time interval and pulse width parameters when producing pulsed RF signals with the Na '848-Mehta combination (*supra* Section IX.C.2(c)), as Na '848 expressly promotes these disclosed ranges. EX1003, ¶199. Indeed, the only places where the '774 specification mentions these ranges is in the portions of the '774 patent which overlaps with Na '848, such that the only possible written description support for this limitation in the '774 patent is substantially identical to the prior art teachings of Na '848. *Compare*

EX1001 at 6:13-58, FIGS. 5A-5B *with* EX1005 at [0039], [0040], FIGS. 5A-5B; EX1003, ¶199.

The Na '848-Mehta combination thus renders claim 8 obvious.

6. Dependent Claim 10

The Na '848-Mehta combination includes the limitations of claim 10. EX1003, ¶204-206.

As discussed above in Section IX.C.2(c), the Na '848-Mehta combination discloses directing the signal generator electrically to produce pulsed radio frequency signals across the plurality of needles. Further, in view of the discussion above in Section IX.C.5, the Na '848-Mehta combination further renders obvious pulsed radio frequency signals being produced for a predetermined time interval and with each pulse having a width. Na '848 further discloses that the pulsed signals are periodic. EX1005 at [0039]-[0040]; EX1003, ¶204. A POSA would have understood that the pulsed RF signals taught in Mehta, which may be produced in the form of a square wave, are periodic and have a predetermined time interval and a pulse width as well. *Supra* Section IX.A.6; EX1003, ¶205.

The Na '848-Mehta combination thus renders claim 10 obvious.

7. Independent Claim 11

The Na '848-Mehta combination renders claim 11 obvious. EX1003, ¶¶207-214.

(a) Element [11pre]

Na '848 teaches Element [11pre]. *Supra* Section IX.C.2.a; EX1003, ¶¶208-209.

(b) Element [11a]

Na '848 teaches Element [11a]. *Supra* Section IX.C.2.b (regarding [1a]); EX1003, ¶¶210-211. Relative to Element [1a], Element [11a] additionally recites that the desired distance is “selected to enable the plurality of needles to penetrate dermatological tissue.” The discussion above regarding [1a] shows that Na '848 teaches this limitation. For example, FIG. 2B reproduced above in Section IX.C.2.b depicts a plurality of needles extending a desired distance (A) from a device surface, and Na '848 teaches that the desired distance (A) was selected to enable the plurality of needles to penetrate dermatological tissue. EX1005 at [0042] (“A user, clinician, or equipment may place an apparatus . . . 360 [depicted in FIG. 2B] . . . on dermalogical [*sic*] cells to be treated (activity 741) including pressing the apparatus against the cells firmly enough to embed one or more pins . . . 351 [depicted in FIG. 2B] . . . in the cells.”); EX1003, ¶210.

(c) Element [11b]

The Na '848-Mehta combination includes Element [11b]. *Supra* Section IX.C.2.c; EX1003, ¶¶212-214.

8. Dependent Claim 15

The Na '848-Mehta combination renders claim 15 obvious. *Supra* Section IX.C.3 (regarding claim 5); EX1003, ¶215.

9. Dependent Claims 16 and 17

The Na '848-Mehta combination renders claims 16 and 17 obvious. *Supra* Section IX.C.4 (regarding claims 7 and 9); EX1003, ¶¶216-217.

10. Dependent Claim 18

The Na '848-Mehta combination renders claim 18 obvious. *Supra* Section IX.C.6 (regarding claim 10); EX1003, ¶¶218.

11. Dependent Claims 19 and 20

The Na '848-Mehta combination includes “the predetermined time interval is about 100 ms to 500 ms,” as recited in claim 19, and “the pulse width is about 100 microseconds to 500 microseconds,” as recited in claim 20. *Supra* Section IX.C.5 (regarding claim 8); EX1003, ¶¶219-220.

D. Ground IV: Mehta and Lee Render Claims 1-7 and 9-18 Obvious

Petitioners set forth Ground IV herein in response to Patent Owner’s narrow interpretation of “desired distance.” *Supra* Section VII.B. As an initial matter, Petitioners disagree with Patent Owner’s interpretation of “desired distance” for the reasons discussed above in Section VII.B. Further, as discussed above in

Section IX.A.1.b, even under Patent Owner’s narrow interpretation of “desired distance,” Mehta anticipates claims 1-7 and 9-18.

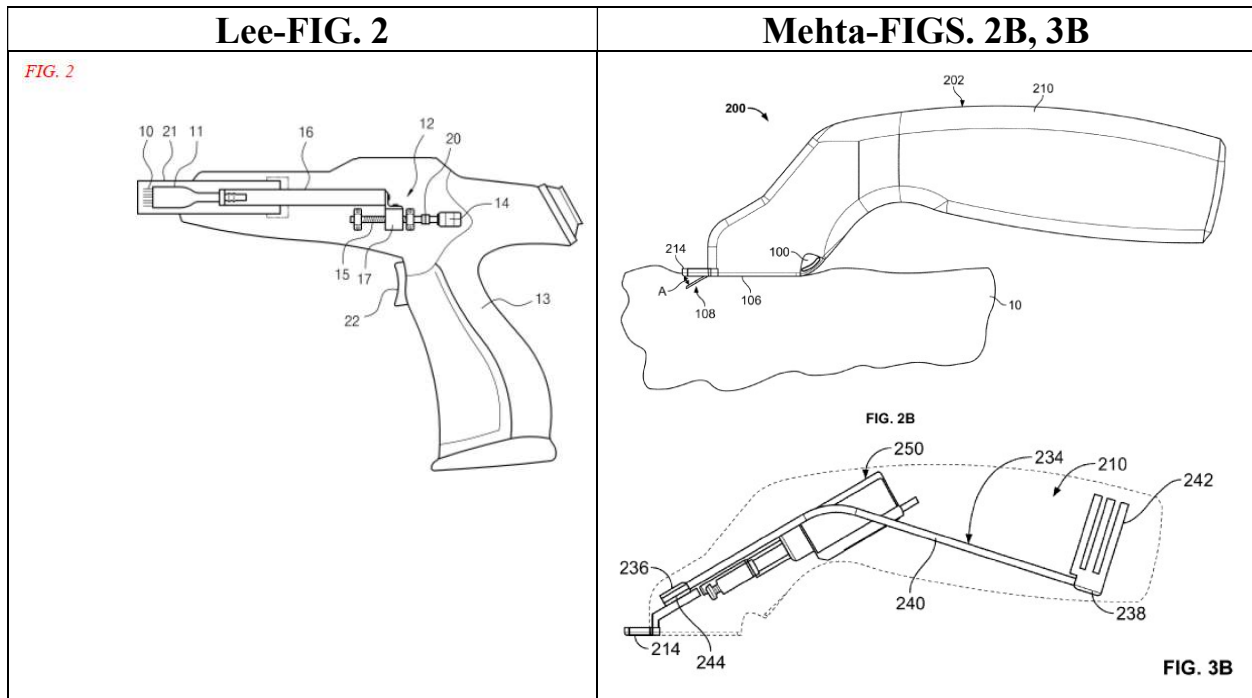
However, should Mehta be found to not disclose needles extendable a “desired distance” based on the adoption of Patent Owner’s interpretation of “desired distance” or otherwise, claims 1-7 and 9-18 would have been obvious to a POSA under Section 103 in view of Mehta and Lee. EX1003, ¶¶221-241.

1. The Mehta-Lee Combination

It would have been obvious to a POSA prior to the earliest possible priority date of the ’774 patent to combine Mehta with Lee to arrive at the subject matter of claims 1-7 and 9-18. EX1003, ¶¶222-238. As discussed above in Section IX.B.1, Mehta is analogous art with respect to the ’774 patent. Lee is also analogous art with respect to the ’774 patent because it is in the same field of endeavor as the ’774 patent, namely systems and methods for treating dermatological tissue. EX1011 at <13>-<18>; EX1003, ¶222.

A POSA would have been motivated to combine Mehta and Lee because they are directed to similar technologies and a skilled artisan would have understood the benefits of combining these two references. EX1003, ¶223. A POSA would have understood that there was a high likelihood of success in making the combination. *Id.* Mehta and Lee are readily combinable because both references are directed to systems and methods of treating dermatological tissue

using needles driven into skin tissue by a stepper motor. EX1011 at <23>-<26>, <45>-<53>, <60>-<63>, FIGS. 2-4b; EX1004 at 15:34-40, FIGS. 2B, 3B; EX1003, ¶223.



A POSA would have been motivated to use and configure the Mehta system in view of Lee to include the stepper motor taught by Lee to precisely control a needle extension distance along the axis of extension, by following Lee's teaching of using a stepper motor for precise control of needle insertion depth along the axis of needle extension. EX1011 at <45>-<50>, <69>, FIGS. 4a-4b; EX1003, ¶¶223-225. Lee provides compelling reasons to combine its teachings with those of Mehta. A POSA would have been motivated to modify Mehta with the Lee motor to gain the benefits of being able to control needle insertion to a specific target

depth and location as taught by Lee, and also sought by Mehta. EX1004 at 12:41-13:4 (avoiding burns), 21:14-21 (uniformity; avoiding undesirable cosmetic outcomes and insufficient treatment), 33:30-31; EX1011 at <69> (minimizing pain; low cost; customized treatment; safety); EX1003, ¶¶226-236. Thus, to the extent that Mehta does not teach controlling the needle extension along the axis of extension, a POSA would have been motivated to improve upon Mehta by providing for this type of control as taught by Lee (in addition to controlling the angle of insertion as taught by Mehta) so as to achieve an even more precise and flexible manner of inserting needles to a desired target depth and location. EX1003, ¶¶235-236.

A skilled artisan would have combined Mehta and Lee and would have had a reasonable expectation of success in doing so. EX1003, ¶¶237-238. When the prior art identifies a problem (controlling needle insertion depth) and provides express guidance on how to fix the problem (a “position-controllable” motor 14, which may be a “stepping motor,” which allows for precise control of an insertion depth of the needles along the axis of needle extension) as in Lee, a skilled artisan would have had a reasonable expectation of success in combining the prior art. *See, e.g., Inland Steel*, 265 F.3d at 1364.

Modifying Mehta to use the motor in the manner taught by Lee would have yielded predictable results, as it amounts to nothing more than the operation of a

known component (a stepper motor as disclosed in Mehta and as also disclosed in Lee) according to its established function (providing step-based actuation for needles along the axis of needle extension as taught by Lee). EX1003, ¶¶237-238; *see KSR*, 550 U.S. at 416-17. No hardware modification to Mehta’s components would have been required, as a POSA would have only needed to appropriately configure Mehta’s controller, through routine programming, to operate the stepper motor as taught by Lee in this known way—i.e., controlling a motor, via routine programming, to extend needles a desired distance corresponding to a user selection. EX1003, ¶¶237-238; EX1011 at <50>. This combination is not one of innovation, but rather ordinary skill. *KSR*, 550 U.S. at 421; EX1003, ¶¶237-238.

For example, a POSA would have readily been able to perform routine programming to (i) provide a distance setting on Mehta’s I/O interface (*see* EX1004 at 12:5-14) for selecting a needle extension distance and (ii) configure Mehta’s control system/energy supply unit 90 (*see* EX1004 at 10:38-39) to convert the user-selected needle extension distance to a control signal (e.g. a pulse train for a step-motor). *See* EX1003, ¶238. Mehta already discloses an I/O interface “that allows the physician to input control and processing variables, to enable the controller to generate appropriate command signals” (EX1004 at 12:5-8), and adding a parameter to the I/O interface and generating a corresponding command signal were well within the capabilities of a POSA. *See* EX1003, ¶238. Further,

Lee expressly discloses that a motor may be controlled, through “pre-programm[ing],” to extend needles a desired distance corresponding to a user selection. *See id.*; EX1011 at <50>.

Accordingly, the combination of Mehta and Lee renders claims 1-7 and 9-18 of the ’774 patent obvious.

2. Claims 1-7 and 9-18

Mehta discloses all of the limitations of claims 1-7 and 9-18 for the reasons discussed above in Section IX.A. However, should Mehta be found to not disclose the “desired distance” limitations recited in claims 1-7 and 9-18 based on the adoption of Patent Owner’s interpretation of “desired distance” or otherwise, it would have been obvious to a POSA prior to the earliest possible priority date of the ’774 patent to combine Mehta with Lee to arrive at the subject matter of claims 1-7 and 9-18. EX1003, ¶¶239-241.

Lee teaches a “position-controllable” motor 14, which may be a “stepping motor,” that rotates to move a slider 17 and needle mount 11, which allows for precise control of an insertion depth of the needles along the axis of needle extension. EX1011 at <46>-<50>, FIGS. 4a-4b, <69>. Lee further teaches that the extendable needles are extended and reciprocally retracted multiple times by repetitively driving the motor back and forth for dermatological treatment. EX1011 at FIGS. 4a-4b, <58>, <62>-<63>. Further, it would have been obvious to

combine these teachings of Lee (regarding how to use a motor for needle extension) with the teachings of Mehta (regarding a motor being used for needle extension) to arrive at the “desired distance” limitations of claims 1-7 and 9-18, namely those found in Element 1[a], claims 2-6, Element 11[a], and claims 12-15. *Supra* Section IX.D.1; EX1003, ¶¶239-241.

E. Ground V: Mehta, Lee, and Na ’848 Render Claims 8, 19, and 20 Obvious

As discussed above in Section IX.B (Ground II), the Mehta-Na ’848 combination renders claims 8, 19, and 20 obvious. However, should Mehta be found to not disclose needles extendable a “desired distance” based on the adoption of Patent Owner’s interpretation of “desired distance” or otherwise, claims 8, 19, and 20 would have been obvious to a POSA under Section 103 in view of Mehta and Lee, further in view of Na ’848. EX1003, ¶¶242-244.

1. The Mehta-Lee-Na ’848 Combination

A POSA would have been motivated to modify Mehta with Lee for the reasons discussed above in Section IX.D.1, and a POSA would have further been motivated to modify the Mehta-Lee combination with Na ’848 for the reasons discussed above in Section IX.B.1. As discussed in Sections IX.B.1 and IX.D.1, all three of these references are analogous art with respect to the ’774 patent and are directed to systems and methods of treating dermatological tissue using needles driven into skin tissue. A POSA would have been motivated to apply

advantageous teachings of Lee regarding precise control of needle insertion depth, as well as advantageous teachings of Na '848 relating to the production of pulsed RF signals, to Mehta's treatment system. EX1003, ¶243.

Further, a POSA would have understood that there was a high likelihood of success in making the combination of these three references, as the combination would have been a matter of routine engineering with regard to appropriately configuring a controller of Mehta's treatment system to use known components (RF signal generator and motor) according to their established functions (generating pulsed RF signals with certain parameters and actuating needles to extend by a controllable distance), and would have yielded predictable results. *Supra* Sections IX.B.1 and IX.D.1; EX1003, ¶243.

2. Dependent Claims 8, 19, and 20

Claim 8 is obvious in view of Mehta, Lee, and Na '848 for the reasons discussed above in Sections IX.D., IX.B.1, IX.B.2, and IX.E.1, and claims 19 and 20 are obvious in view of Mehta, Lee, and Na '848 for the reasons discussed above in Sections IX.D, IX.B.1, IX.B.3, and IX.E.1. EX1003, ¶244.

X. THE BOARD SHOULD INSTITUTE TRIAL UNDER SECTIONS 314 AND 325

The Board should not exercise its discretion to deny institution under 35 U.S.C. §§ 314 or 325. The district court action involving Petitioners accused of infringement of the '774 patent has been stayed. This Petition presents compelling

evidence of non-patentability from IPR2024-00383 based on its prior art, expert testimony, and arguments that are entirely new and different from those previously considered by the Office during original examination and the Cartessa Aesthetics IPRs. No Ground is based on “roadmapping” from the outcome in the Cartessa Aesthetics IPRs. And—perhaps most importantly—institution and joinder to IPR2024-00383 furthers “the Board’s mission to improve patent quality.”

Code200, UAB v. Bright Data Ltd., IPR2022-00861, 2022 WL 3646167, at *3 (P.T.A.B. Aug. 23, 2022) (precedential) (internal quotations and citation omitted).

A. The Board Should Not Exercise Its Discretion to Deny Institution Under 35 U.S.C. § 314(a)

The existence of a parallel ITC proceeding should not be a consideration for whether the Board in its discretion may deny institution of IPR. Vidal, K., Memorandum, “Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation,” at 6-7 (USPTO June 21, 2022) (“The PTAB will not discretionarily deny petitions based on applying *Fintiv* to a parallel ITC proceeding”) (“Interim Procedure”).

The district court litigation in which Patent Owner asserts Petitioners’ systems are infringing has been stayed. There has been no Scheduling Conference, and no trial date has been set. The Board will issue a final written decision in this IPR long before any such litigation would go to trial, and, accordingly, whatever

estoppel effect this IPR has, if any, would go into effect then. The Board should therefore not discretionarily deny institution of IPR in view of any parallel proceeding. *See* Interim Procedure at 7.

This Petition presents exceptionally compelling evidence of unpatentability that the Board found demonstrates a “reasonable likelihood” that all remaining claims in IPR2024-00383 are unpatentable (Institution Decision, at 2, 18-19, based on the same grounds). This Petition, by joining Petitioners to instituted IPR2024-00383, would allow trial to complete, should Jeisys terminate from the proceeding, “to improve patent quality and restore confidence in the presumption of validity that comes with issued patents.” *Code200*, 2022 WL 3646167, at *2 (internal quotations omitted). The “AIA was designed to encourage the filing of meritorious patentability challenges, by any person who is not the patent owner.” *Coalition for Affordable Drugs VI, LLC v. Celgene Corp.*, IPR2015-01092, Paper 19 at 4 (P.T.A.B. Sept. 25, 2015); Interim Procedure at 4-5 (clarifying, where there is compelling evidence of unpatentability, “the PTAB should not discretionarily deny institution under *Fintiv*”).

General Plastic Industrial v. Canon Kabushiki Kaisha, IPR2016-01357, Paper 19 at 15-19 (P.T.A.B. Sept. 6, 2017) (precedential) and its progeny also do not apply. This is an exceptionally strong petition, and Petitioners were not a real party in interest or in privity with the petitioner in the Cartessa Aesthetics IPRs.

See Illumina v. Ravgen, IPR2021-01271, Paper 12, at 15-20 (P.T.A.B. Jan. 26, 2022). Petitioners do not have a “significant relationship” with Cartessa Aesthetics, had no control over the Cartessa Aesthetics IPRs, did not participate or provide input into the Cartessa Aesthetics IPRs, and had no knowledge of them prior to their being filed. *See Valve Corp. v. Elec. Scripting Prods., Inc.*, IPR2019-00062, Paper 11 at 2, 10 (P.T.A.B. Apr. 2, 2019); *Toyota Motor Corp. v. Intellectual Ventures II*, IPR2022-00708, Paper 12, at 10 (P.T.A.B. Oct. 12, 2022). Petitioners filed the present petition on their own behalf and as the real parties in interest, and not “at the behest of [anyone else].” *See Western Digital Techs. Inc. v. Viasat, Inc.*, IPR2022-01126, Paper 13, at 15 (P.T.A.B. Nov. 29, 2022).

Of great significance, Petitioners are not using the Cartessa Aesthetics IPR as a “roadmap.” Petitioners employ entirely different art, different arguments, and a different expert. They makes no use of the art, argument, responses, or holdings in the Cartessa Aesthetics IPRs to “refine” failed arguments there. *Toyota Motor*, IPR2022-00708, Paper 12, at 10 (quoting *Code200*) (“[F]actors 1-3 only weigh in favor of discretionary denial when there are ‘road-mapping’ concerns under factor 3 or other concerns under factor 2.”).

This is Petitioners’ first petition for IPR of the ’774 patent and the timing of its filing involves no improper gamesmanship. *Netflix, Inc. et al. v. Uniloc 2017 LLC*, IPR2020-00041, Paper 10, at 12 (P.T.A.B. Mar. 25, 2020) (holding factor 2,

4, and 5 do not weigh in favor of denying institution in view of alleged delay in filing). This Petition should be granted because it presents new and strong evidence of unpatentability of claims 1-20 from IPR2024-00383 requested “by a different petitioner . . . , applying substantially different prior art, based on substantially different arguments,” and thus “cannot be said to be wasteful of resources of the Board.” *Western Digital Corp. v. SPEX Techs., Inc.*, IPR2018-00082, 2018 WL 1990246, at *9 (P.T.A.B. Apr. 25, 2018); *see also Code200*, IPR2022-00861, 2022 WL 3646167, at *3 (factor 6 must consider Board’s mission to improve patent quality); Interim Procedure at 2 (should not discretionarily deny institution where “petition presents compelling evidence of unpatentability”).

B. The Board Should Not Exercise Its Discretion to Deny Institution Under 35 U.S.C. § 325(d)

The Petition submits prior art from IPR2024-00383 that is substantially different than previously considered by the Patent Office. Under 35 U.S.C. § 325(d), “[i]n determining whether to institute . . . the Director may take into account whether . . . the same or substantially the same prior art or arguments previously were presented to the Office.” That Section does not apply here because the aforementioned prior art references from IPR2024-00383 are new and different from any prior art considered earlier. Accordingly, the above arguments

from IPR2024-00383 are also entirely new and different from any presented earlier.

Under § 325(d), the Board uses the following two-part framework: (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of the first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. *Advanced Bionics, LLC v. Med-el Elektromedizinische Geräte GmbH*, IPR2019-01469, 2020 WL 740292, at *3 (P.T.A.B. Feb. 13, 2020) (precedential). In this case, these factors counsel for the grant of the petition.

None of Mehta, Na '848, or Lee was of record in the original examination or earlier Cartessa Aesthetics IPRs. These references provide compelling new evidence of anticipation and obviousness that demands consideration by the Office. None of this new evidence from IPR2024-00383 is cumulative or overlaps with any art or arguments presented earlier. These factors strongly argue in favor of institution of IPR.

XI. CONCLUSION

Based on the foregoing, Petitioners respectfully request that a Trial be instituted and that claims 1-20 of the '774 patent be canceled.

Respectfully submitted,

Date: August 1, 2024

/ Guy Yonay /
Guy Yonay
Registration No. 52,388

CERTIFICATE OF WORD COUNT COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I hereby certify that this Petition complies with the type-volume limits of 37 C.F.R. § 42.24(a)(1)(i). As calculated by the word count feature of the word-processing system used to prepare this Petition, it contains 13,879 words, excluding the parts of this Petition that are exempted by 37 C.F.R. § 42.24(a) (including a table of contents, a table of authorities, mandatory notices under 37 C.F.R. § 42.8, a certificate of service or word count, and appendix of exhibits or claim listing).

Date: August 1, 2024

/ Guy Yonay /
Guy Yonay
Registration No. 52,388

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.105, I hereby certify that a complete copy of the attached Petition for *Inter Partes* Review of U.S. Patent No. 9,775,774 and supporting Exhibits is being served via Priority Mail Express on August 1, 2024, the same day as the filing of the above-identified document in the USPTO with the Patent Trial and Appeal Board, on the Patent Owner at the following correspondence address of record in the USPTO Patent Center:

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